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February 19, 2007 • Volume 24, Number 5

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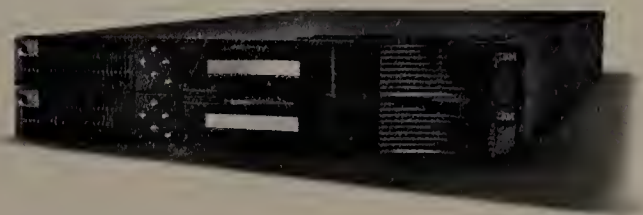
_INFRASTRUCTURE LOG

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Best of the New Data Center

In this first of our six-part, fourth annual New Data Center series, we take a stroll down the concept's walk of fame, from technological innovation to stellar examples of enterprise best practices.

Beginning on page 24 you'll find:

- 10 best products for the New Data Center
 - Six open source gems.
- Best practices for building a Linux grid.
- Top tips for implementing an enterprise service-oriented architecture.
- A heads-up on a great New Data Center career opportunity.
- A status report on how automated IT is today.

Cisco addresses security gear flaws

■ Bad things came in threes for Cisco security users last week, as the vendor announced vulnerabilities in security hardware products that could lead to denial-of-service attacks on the devices. Cisco's widely used stand-alone PIX Firewall, Firewall Services Module for switches and routers, and Adaptive Security Appliance are vulnerable to receiving a wide variety of doctored packets, which could result in a DoS attack on the products. Meanwhile, a fourth vulnerability could let attackers evade detection when going after this security gear: Cisco's IOS-based Intrusion Prevention System feature has a flaw that could enable hackers to chop up the malicious packets to evade IPS detection when attacking a Cisco PIX, ASA or other network devices. Cisco has released new software versions that fix the vulnerabilities.

10G market climbs past \$1 billion mark

■ Lower 10G port costs and growing bandwidth demands pushed the 10G Ethernet market past the \$1 billion mark for the first time in 2006, the Dell'Oro Group says. The average 10G Ethernet port cost about \$4,000 last year — \$1,000 less than in 2005. Meanwhile, sales of 10G Ethernet gear climbed almost 60%, to \$1.2 billion, in 2006.

Metro IT jobs prone to outsourcing

■ Offshoring may eliminate as many as one in five programming, software engineering and back-office jobs during the next several years in certain metropolitan areas, according to a new study by the Brookings Institution. The think tank found that 28 metropolitan areas with 13.5% of the nation's population are likely to lose between 2.6% and 4.3% of their jobs to service offshoring.

Attackers seize on Word vulnerability

■ Microsoft's Word and Office

programs have been targeted again, with the company saying that hackers may be exploit-

ing a new vulnerability in the applications. The warning came just after the company issued fixes for 20 other bugs in its products last week, including six for Word. The latest problem affects Office 2000 and Office XP, Microsoft said in a security advisory. An attacker could create a specially-crafted Word document that, if opened, could let the attacker control a victim's computer remotely. Microsoft said it would divert from its patch schedule, set for the second Tuesday of the month, if it considers it necessary in this case.

Business, IT leaders don't think alike

■ Technology executives think highly of their ability to deliver

TheGoodTheBadTheUgly

Learn SAP, now. Demand for SAP experts is on the rise, and salaries are up as much as 15.6% for some, dwarfing the typical increases in IT salaries of 3% to 5% a year, according to Foote Partners. A survey by the consultancy found that the average base salary for directors of SAP program management rose from \$115,468 to \$133,500 in the calendar year that just ended. See related story on page 16.

< Find a laptop? Call the FBI.

The FBI is losing fewer laptops — and weapons — these days than it used to, but the criminal justice organization still needs better controls in place to protect its assets, including potentially sensitive data. The report issued this month by a division of the U.S. Department of Justice follows up on 2002 report, and found that the FBI still lost 160 weapons and 160 laptops over a 44-month period, and alarmingly, "could not determine in many cases whether the lost or stolen laptop computers contained sensitive or classified information."



I don't want my mobile TV Issues with price, reliability and quality may dampen demand for mobile television in the United States, just as the service is about to hatch here. That's the conclusion of a survey of 22,000 European mobile-service users commissioned by Tellabs. The survey found that former users now outnumber current ones by more than 19%.

effective IT strategies — quite a bit higher than their business counterparts do, according to Saugatuck Technology. The disconnect between the two camps is most obvious among IT initiatives that focus on business process outsourcing and database consolidation. In the research firm's latest survey, about 70% of IT executives said BPO strategies were effective, while 42% of business leaders agreed. Close to 80% of CIOs said database-consolidation efforts were paying off, while 53% of CEOs indicated that they felt the same. Other areas in which business and IT leaders didn't agree include server consolidation and virtualization, business intelligence and performance-management initiatives. ■

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PEERSAY

From our online forums

■ **Webkinz: Threat or menace?** OK, maybe that's not fair to the little plushies with their own online personae. But we're curious: How many of you have started rocking out with them as hard as your kids? Take our survey and let us know: www.nwdocfinder.com/7426

■ **What we missed on the telecom song list.** Who knew there were so many pop songs involving telephones? You did, obviously, because you're telling us about them all at: www.nwdocfinder.com/7427

■ **Microsoft vs. IBM on standards.** User SteveJ yawns when he reads about the two battling over Open XML: "They are both big companies after your money." www.nwdocfinder.com/7448

■ **The silicon chip inside her head.** Users debate a proposed North Dakota law that would ban implantable RFID chips. NocMaster writes: "Well there are good and bad to everything, implanting in kids to a certain age might be good as to prevent kidnapping, but at what cost. . . . But once you start to spread this type of technology to one application they will keep forcing it into more." www.nwdocfinder.com/7447

■ **Evolving technology.** One user isn't sure enterprises will be able to keep up: "It will become more and more difficult for most companies to have in-house talent for technology-related functions." www.nwdocfinder.com/7449

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Cisco Subnet

Check out *Network World's* new Cisco Subnet, the independent voice for Cisco customers. Our editors scour the Web for the most important Cisco-related news, blogs, security alerts and more — all presented on one page.

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BLOGOSPHERE

VoIP vs. home security

Plus: Acunetix fires back, trouble in India and pencil scribbles

VoIP vs. home security. Layer 8 dives into the problem of using home security systems with a VoIP telephone service. They don't exactly play well together. www.nwdocfinder.com/7443

Acunetix responds to expert's challenge. Buzzblog has become the playing field for a joust between Acunetix and Joel Snyder, with Buzz's Paul McNamara as referee — or something like that. Acunetix started things off with a survey that says 70% of all Web sites had vulnerabilities that pose a medium- to high-level risk of a serious data breach. Snyder bet \$1,000 of his own money that the survey was wrong. Acunetix responded, but Snyder and participants in our forum said the company was missing the point and/or changing the subject. www.nwdocfinder.com/7444

Lead size and hardness. There is a blog about pencils. There is a blog about notebooks

(the kind you write in with a pencil). And then there is the highly specialized Dave's Mechanical Pencils, which Adam Gaffin says is "for people who think yellow Number 2s are too wussy and who might enjoy a frank and open discussion of lead size and hardness." And then there is Compendium, where Adam surfs these kinds of sites all day and writes about them. www.nwdocfinder.com/7445

Pitfall of outsourcing. Linda Musthaler says social unrest can sometimes throw a monkey wrench into your company's money-saving outsourcing plans, and notes that many of the largest Indian tech companies were forced to close last week for a general strike over water resources. She isn't saying this is a reason to avoid doing business with companies in other countries — she's just saying you should know what you're getting into. www.nwdocfinder.com/7446

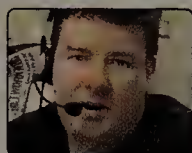
IT VIDEO

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Hot Seat: Convergence juggling act.
Brix

Networks CEO Tom Pincince explains how insurance giant Aetna converged its voice and data networks without sacrificing voice quality. www.nwdocfinder.com/7440



Cool Tools: Speech recognition gets "bettah."

Keith Shaw gives Version 9 of Nuance's Dragon NaturallySpeaking a spin, and sees if it can handle a co-worker's thick Boston accent. www.nwdocfinder.com/7441



Voices from IT Roadmap: Speedy app delivery.

Sling Media's Olav Phillips explains how his company distributed its player application more efficiently to a global audience. www.nwdocfinder.com/7442



Find the answers to these prickly problems online.

■ **This week:** Connecting a building to the campus LAN.

Ron Nutter helps a user figure the best way to connect a building to the campus LAN.

Help Desk response:
www.nwdocfinder.com/7430

Wireless security newsletter writer Tim Cranny explains how Wi-Fi hot spots make you register to use them. **Help Desk response:**
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Analyst Robin Gareiss examines the importance of a corporate culture across a distributed enterprise. **Help Desk response:**
www.nwdocfinder.com/7432

Security newsletter writer M.E. Kabay discusses root-cause analysis in diagnosing break-in attempts. **Help Desk response:**
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BEST OF NW'S NEWSLETTERS

Management innovation: Follow the money

Shortening the time it takes to hire in IT

Network/systems management: Management vendors are raking in the dough lately, as the trend for venture capital funding around network and systems management continues to grow. Senior Editor Denise Dubie explains.

www.nwdocfinder.com/7434

Technology executive: Newsletter author Linda Musthaler reports there are two trends in hard disk technology that are coming together to create a compelling set of benefits for buyers of servers and storage devices: Drives are getting faster, smaller and less expensive, and you get to reap the benefits. www.nwdocfinder.com/7435

Storage in the enterprise: As security and storage intermingle, every specialized storage security vendor recently made nice to RSA, the security division of EMC. Senior Editor Deni Connor takes a look. www.nwdocfinder.com/7436

IT leadership: The time it takes to fill a full-time IT position is 56 days for a staffer and 87 days for a manager. Senior Managing Editor Amy Schurr has some ideas for shortening the wait. www.nwdocfinder.com/7437

Servers: Attendees to the Share conference, the annual get-together of the IBM user group, will get a first look at the new z/VM operating system for IBM's System z mainframes. Senior Editor Jennifer Mears reports. www.nwdocfinder.com/7438

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NEWS

Don't expect video to exhaust fiber glut

Bandwidth prices stabilizing based on additional factors, consolidation

BY JIM DUFFY

Cisco says that in 2010, just 20 homes using the latest broadband technology to access video content will generate enough traffic to equal the entire load on the Internet in 1995.

Juniper says YouTube already generates traffic equal to the entire Internet load in 2000.

The widely held assumption is that the explosive growth of video across the Internet will quickly exhaust excess capacity and spike bandwidth prices that have dropped almost 60% per year for the past three years. But so far, this

has yet to prove out.

Not everyone believes the widely reported "fiber glut" of the late 1990s and early 2000s will be exhausted by video, prompting a spike in the price of retail and wholesale bandwidth. Some believe video will hardly make a dent in excess capacity but pricing will stabilize based on other factors, such as industry consolidation creating fewer suppliers.

"In long haul, there is still plenty of fiber," says Andrew Odlyzko, director of the Digital Technology Center at the University of Minnesota. "If you look at the total Inter-

net traffic in the U.S., it could be squeezed down one or at most two fiber strands. And on most routes you have hundreds of strands."

David Rusin, CEO of American Fiber Systems, a Rochester, N.Y., provider of lit and dark fiber resources, agrees that fiber is plentiful. "Now what's happening with consolidation, which affects supply... that could have an impact if [carriers] no longer provide dark fiber."

Insight Research did a study in 2001 of fiber utilization among 13 major long-haul carriers. Data was culled from fiber pairs in 24 major cities. Only 7% to 8% of the total capacity was used, and of that only 3% to 4% was actually lit, says

Robert Rosenberg, president of Insight Research. Historically, utilization has been more like 30% to 40%, he says.

"It was really a small percentage of the capacity in the ground," Rosenberg says. "You said to yourself, 'Gosh, this thing is never going to go away.'"

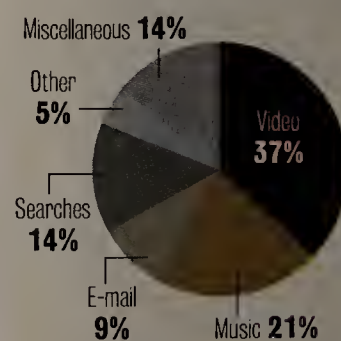
Tracking traffic

Couple with that the slowing growth of Internet traffic. Even though the rate of video growth has been increasing — Level 3 says 50% to 60% of the traffic across its IP backbone is video, compared with 5% to 10% five years ago — the overall growth of traffic on the Internet has slowed

See Fiber, page 14

Video's more than fair share

Video accounted for more than a third of the traffic on DSL and cable modem lines last year.



SOURCE: IGI GROUP

How Lauth grows IT with downsizing

Jeff Ton has survived the booms and busts of the IT industry during his 28-year career as a programmer, consultant and manager. A year ago, Ton left ailing Thomson Consumer Electronics for a chance to lead the IT department at Lauth Property Group, a fast-growing Indianapolis commercial real estate developer that doubled its revenue last year to \$592 million. The company has 22 permanent locations and dozens of temporary sites that are networked via everything from DSL to satellite technologies. Ton spoke with Senior Editor Carolyn Duffy Marsan about how he is building Lauth's IT staff and infrastructure while preparing for the inevitable downturn. Here are excerpts from their conversation:



How fast is Lauth growing?

Two years ago, Lauth was a \$200 million company. Last year, it was nearly \$600 million. The partners have laid out a plan to get to \$1 billion by 2010. We did an employee survey, and out of 400 employees, 325 had been with the company for less than three years. So it's a huge shift in culture to bring in that many new people in such a short period of time.

See Ton, page 18

Microsoft, IBM in slap fight over open document formats

BY JOHN FONTANA

Microsoft went on the offensive last week. In an open letter it accused IBM of trying to subvert Microsoft's efforts to standardize its new document format and in turn destabilize customer choices.

"A lot of hype — and smoke and mirrors obfuscation — surrounds interoperability these days," Microsoft wrote in an open letter published on its Web site. The letter was authored by Tom Robertson, general manager for interoperability and standards, and Jean Paoli, general manager for interoperability and XML architecture.

The hype and obfuscation references point squarely at IBM, which was the only Ecma International member to vote in December against standardizing Microsoft's Open XML file format.

Ecma International, a membership-based standards organization for information and communication systems, approved the standardization measure.

Open XML is the default file format in Office 2007, and support has been back-ported to Office 2003, Office XP and Office 2000.

After the Ecma vote, Bob Sutor, IBM's vice president of open source and open standards, wrote on his blog: "The OpenDocument Format ISO standard is vastly superior to the Open XML spec." Sutor also said in his post: "ODF is what the world needs today to drive competition, innovation and lower costs for customers. It is an example of a real open standard

versus a vendor-dictated spec that documents proprietary products via XML. ODF is about the future, Open XML is about the past. We voted for the future."

Microsoft is seeking further standardization of Open XML through the International Organization for Standardization (ISO), a move that IBM also is contesting.

Microsoft claims its rival has led a campaign to subvert Open XML standardization at the ISO and is trying to prevent the format from being judged on its technical merits.

The open letter states: "This campaign to stop even the consideration of Open XML in [ISO] is a blatant attempt to use the standards process to limit choice in the marketplace for ulterior commercial motives — and without regard for the negative impact on consumer choice and technological innovation."

IBM added more fuel to the fire last week when it released what it calls the Open Client Solution, an Eclipse-based cross-platform desktop client that has a set of collaboration components, including a document editor that supports ODF but not Open XML.

By Wednesday, Microsoft had heard enough.

"Microsoft has determined that it is important to shine a bright light on IBM's activities that will have a negative impact on the IT industry and customers, including taking concrete steps to prevent customer choice, engaging in hypocrisy, and working against

See Formats, page 12

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LinuxWorld speakers talk up security

Intel security manager advises attendees to learn how to destroy their companies.

BY JON BRODKIN

The first step in protecting your enterprise is figuring out how to destroy it.

That's the approach to security taken by Jonathan Clemens, manager of enterprise security oversight at Intel. He recommends that companies conduct war games to find their biggest weaknesses.

"By a war game, I mean a tabletop exercise," Clemens said at IDG's LinuxWorld OpenSolutions Summit in New York City last week. "Sit down and be your biggest competitor, be an attacker, put yourself in the criminal mind set. . . . Until you know how you could destroy your company, you can't understand how you can prevent someone else from doing that."

Although identifying vulnerabilities to attacks may seem like an

obvious step, when Clemens asked the audience whether they knew how to destroy their companies, just a few people out of several dozen raised their hands.

He was wary of revealing specifics about the war games conducted at Intel. But he noted that Intel makes chips, and it would be damaging if the company made chips that could not perform mathematical calculations properly.

"What would happen if I was a competitor of Intel and I wanted to discredit them? Would that be a way to do it?" Clemens asked. "So you look at your core product [and] you look at who would want you to fail in that area. . . . You go through these mental exercises and say, 'what's the worst case scenario?'"

The worst-case scenario could

involve the threat of physical harm, he told the audience, making note of a bank robbery in England last year that involved the family of a bank manager being taken hostage.

In a follow-up exchange with *Network World*, Clemens noted that IT managers handle data, rather than cash, but that attacks involving hostages are not unthinkable in the IT industry.

"If the financial industry, which has had centuries of armed robberies to deal with, can't defend against such an attack, how can the IT industry, where system administrators are in positions of similar responsibility, but over data rather than cash?" he questioned.

In his talk at the LinuxWorld event, Clemens also discussed such emerging threats as viruses

aimed at mobile devices and custom attacks aimed at specific corporations.

"Being on the Internet is like sharing your toothbrush with 1 billion of your closest neighbors," he said. "There are people on the Internet who are smarter than you. . . . There are people who are less ethical than us."

Clemens recommended that enterprises develop security policies, which should be high-level statements, not attempts to address every conceivable problem. He discussed various layers of data protection, including risk assessments; training; physical security, such as guards and surveillance cameras; and network security measures.

"Does every device in your network have the ability to talk to

every other device? If it does, why?" he said.

Open-source compliance

Making sure a network is secure also means complying with various regulations, such as the Payment Card Industry data security standard, the Sarbanes-Oxley Act, and the Gramm-Leach-Bliley Act to protect consumers' financial information.

There are many reliable open source tools to comply with these regulations, although it can be hard to convince auditors that these programs are credible, said Jeremiah Cruit-Salzberg, a security architect for Fair Isaac.

"A lot of times, auditors don't like open source [because] it's a free thing, something you download," said Cruit-Salzberg in a session titled "Using open source tools for regulatory compliance and how to make your auditors accept it."

Documentation is critical, Cruit-Salzberg noted. "If you don't document things, you will run into trouble, especially with open source."

The most valuable open source tool for compliance is Open Office, because it offers great ways to organize documents, Cruit-Salzberg said.

To convince an auditor that your open source tool is reliable, you should make sure it has a good, commercial support system behind it, Cruit-Salzberg said. If your open source tool can keep track of data effectively, but an auditor is still skeptical, it might be time to hire a new auditor.

"If they are not going to work with you, it is vital for you to go find another auditing company. Because to change everything you're doing costs you a lot more money and a lot more grief," Cruit-Salzberg said.

Collecting system logs is another vital part of compliance, and this task can be handled by open source tools such as Snare and Zenoss. Some open source tools are not organized well and should be avoided, but overall, open source is gaining acceptance, he said. "There are very few issues that can't be resolved with an open source tool today," he said. ■

Enterasys broadens its NAC approach

BY TIM GREENE

Enterasys has upgraded the software for its security appliances so they can execute network access control on traffic coming through non-Enterasys switches, making them a viable protection option for the vast number of businesses that don't have the vendor's gear.

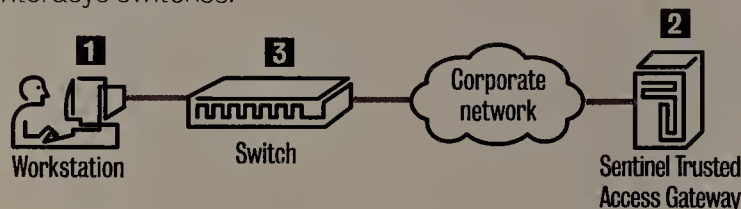
The Sentinel NAC Solution 1.1 software — which consists of the Sentinel Trusted Access Gateway appliance and Sentinel Trusted Access Manager — supports blocking access-switch ports when devices fail network security policies checks, the company says. Sentinel previously did this only via Enterasys switches.

By adding the ability to use SNMP controls to block ports, the company has extended NAC-enforcement capabilities to any managed switch. Alternatively, access to these switches can be blocked by using 802.1Q virtual LAN tags to quarantine traffic from devices that the NAC gear has scanned and found lacking.

The device uses 802.1X authentication to block access to the network. If a customer has Enterasys switches, the NAC gear can make finer determinations of what to block. For example,

NAC gear that works with any switch

Enterasys Sentinel Trusted Access Gateway has two methods of restricting network access using any managed switch as an enforcement point. Previously, the gear worked only with Enterasys switches.



- 1 Network access control client software (not made by Enterasys) scans device trying to access the network.
- 2 Sentinel gateway receives determination of whether the device should gain access.
- 3 If it shouldn't, the Sentinel gateway sends an SNMP or 802.1Q command to the access switch that shuts down the switch port to which the device is attached or grants access, but only to a quarantine virtual LAN.

Bentley College in Waltham, Mass., is deploying Sentinel to block peer-to-peer file sharing, which accounted for more than 75% of network traffic when unchecked, says Todd Marsh, principal network architect for the school.

These new features will put Enterasys in competition with vendors such as ConSentry, Nevis,

StillSecure and Mirage, which make NAC appliances that fit into heterogeneous networks. These vendors contrast themselves with Cisco's NAC architecture, which calls for all Cisco switches. They say customers can add NAC to their network security without major network upgrades.

The Version 1.1 software also integrates Sentinel Trusted Access

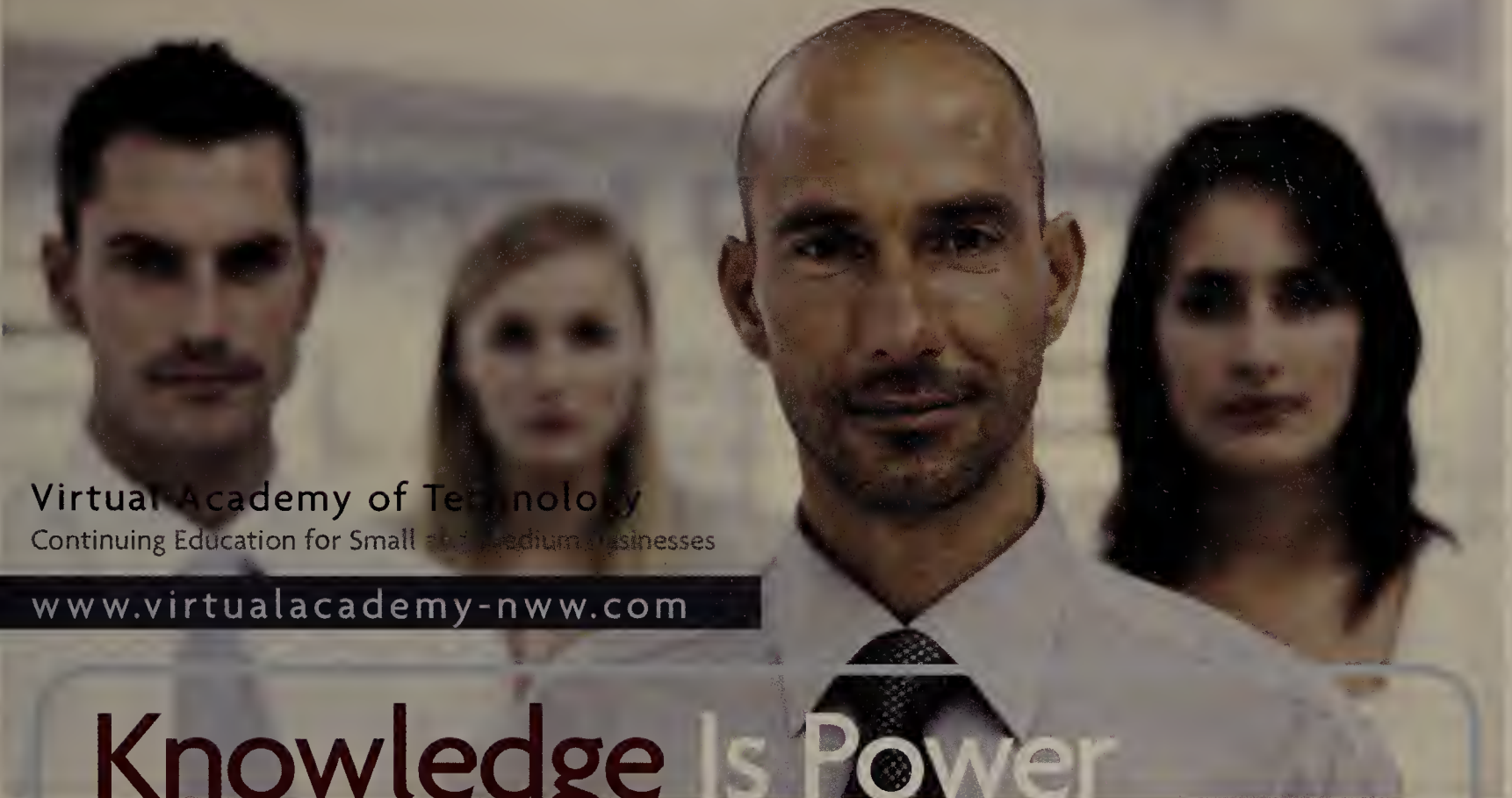
Gateway with Enterasys' Dragon Network Intrusion Detection, making it possible to cut off access to machines that misbehave once they are admitted to networks. If the Dragon software detects an intrusion based on malware signatures or unauthorized behavior, it triggers the Sentinel gateway to block access for that device.

This gives Enterasys preadmission and postadmission NAC capabilities. Preadmission NAC determines whether the security posture of a device meets security standards and therefore may access the network. Postadmission NAC detects when endpoints attempt to access resources they are not supposed to and shuts down their network access.

Enterasys does not make its own NAC client that scans endpoints to perform preadmission NAC. It instead relies on clients made by other vendors.

The Enterasys gear also works in conjunction with endpoint scans that don't require a client made by vendors including Check Point and Symantec.

Pricing for Enterasys Sentinel NAC Solution starts at \$22,000 for 1,000 users. ■



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Microsoft leaves out virtualization

BY JOHN FONTANA

Microsoft last week ported its newest antipiracy platform service to Windows Server 2003, but left out a feature available on versions for Vista and Longhorn Server that lets users run the service in a virtualized environment.

Without the virtualization option for Windows Server 2003 Service Pack 1 and higher, users may have to deploy a new separate server to run the Key Management Service (KMS) that is the center of Microsoft's corporate options for its new Software Protection Platform (SPP) to combat piracy.

The KMS is a network service that uses keys to validate and activate Vista clients, Longhorn Server and eventually other infrastructure pieces, such as Exchange and SQL Server.

The lack of a virtualization option contrasts with the KMS versions that run on Vista or the latest beta build of Longhorn Server. Both versions can be run in a virtualized environment.

Observers say the virtualization option is a key omission and is either a poke at users to migrate or a sign of things to come.

"Many [users] might not be interested in running a workstation operating system [Vista] in their data center or running a beta product [Longhorn Server]," says Josh Phillips, the founder of the WindowsConnected blog and an IT pro for a company he would not disclose. "Many enterprise users today are using virtualization technology to help consolidate hardware in their data centers. [Virtual machines] help reduce the cost, support and maintenance of servers. Now someone who might have been planning to run this in a [virtual machine] or who already does, has to go out and procure physical hardware for a server."

Users can migrate to get the virtualization options, or as Phillips suggests, the lack of virtualization support in Windows Server 2003 might be foretelling the future.

"My assumption is that the next

Longhorn Server will have the same limitation," Phillips says.

Microsoft could eliminate that option in Longhorn Beta 3, which is due shortly, or the final version of the server, slated to ship by year-end, and in SP 1 for Vista, for which a ship date has not been announced.

Microsoft did not comment on the future of KMS and virtualization within back-end infrastructure, but did say, "by design, KMS for Windows Server 2003 is not supported to run within a virtual machine," says Cori Hartje, director of Microsoft's genuine software initiative.

"We recognize that our customers want to take advantage of virtualization, which is why Windows Vista client installations running within a virtual machine are able to activate using KMS for Windows Server 2003," she says.

The virtualization limitation in Windows Server 2003 does not mean users are required to buy a new server. Users with 25 or more clients, or five or more servers,

Antipiracy pitch

As part of its required Software Protection Platform for Vista, Longhorn, and eventually other infrastructure components, Microsoft is offering corporate users the option to deploy a Key Management Service (KMS) internally to control activation of software and to validate licensing. Here are some of the service's requirements and characteristics.

- Windows Vista clients activate by connecting to a central KMS.
- A single KMS supports hundreds of thousands of KMS clients.
- Minimum of two KMS machines recommended (one live, one backup).
- Clients must renew their activation every 180 days.
- Clients get 30-day activation grace period. After that, they go into a "reduced functionality mode."
- At least 25 physical Vista clients or five Longhorn servers have to be connected to the KMS. Clients running on virtual machines don't count toward the 25.
- The KMS will not function inside a virtual machine.

SOURCE: MICROSOFT

have the option of deploying the KMS internally as a way to validate their software instead of using Microsoft's online validation service. The recommended configuration for KMS is to have at least two versions running so that

users have redundancy.

KMS can run on an existing server, but experts say combining other services with KMS on a single box could introduce an element of risk or instability for the critical KMS, which determines if clients and servers run optimally.

KMS was introduced in October last year as part of the SPP program, which validates the use of genuine — that is, paid for — copies of Windows and to partially cripple systems that don't pass muster.

Today, volume-licensing customers purchase software bits and use product keys to install and activate those bits on computers. Under SPP, volume-licensing customers can use a Multiple Activation Key to conduct a one-time activation directly with Microsoft on desktops, or deploy KMS internally to perform the same service.

Under KMS, servers and desktops would have to reactivate every 180 days, excluding a 30-day grace period to correct any failed activations. Failure to reactivate would send computers into a "reduced functionality mode."

The KMS stores all keys encrypted in a centralized store, whereas today those product keys are stored on individual computers.

With KMS ported to Windows Server 2003, Microsoft plans to add KMS management features to System Center Management Server (formerly Systems Management Server). ■

Formats

continued from page 8

the industry and against customer needs," a company spokesman said via e-mail. "Microsoft will continue to be public in identifying the ways that IBM is trying to prevent customer choice."

In the open letter, Microsoft outlines its work on interoperability issues over the past year, including creation of its Interoperability Executive Customer Council, consisting of senior CIOs, and the Interoperability Vendor Alliance, which worked with JBoss and Novell to build interoperability among their products.

On Monday, Microsoft and Novell outlined progress in their relationship in terms of virtualization technology and integration of an open-source translator technology that works between Open XML and ODF.

That work, however, is drawing heat from more than IBM.

Some open source advocates have called for a boycott of Novell, which said it will include the open source Open XML translator in its next version of OpenOffice.

Format fracas

Rivals IBM and Microsoft are in another pitched battle, this time over the future of standardized file formats, specifically the OpenDocument Format (ODF) and Microsoft's Open XML. Here is a look at some of the strengths of both formats.

ODF

- Uses a mixed content model, which is considered friendlier to developers than other models.
- Uses existing standards for such functions as drawing, equations and linking.
- Separation of style and content considered better in ODF than in other formats.
- Specification is 500 pages long.

Open XML

- Captures 100% of formatting in older Office documents.
- Excel formula language completely defined, whereas ODF is still working on its Excel formula specification.
- Spreadsheet format said to be faster than ODF spreadsheet format.
- Specification is 6,000 pages long.

SOURCE: WIKIPEDIA, GROKLAU

In its letter, Microsoft addresses document formats and XML, saying "We believe that Open XML represents an exciting advance toward achieving the original vision of XML, where broad interoperability allows documents to be archived, restructured, aggregated and reused in new and dynamic ways."

Open XML is a departure from Microsoft's practice with its Office file formats, which it has routinely altered as Office has evolved, creating interoperability issues for users with different versions.

The letter goes on to say that Microsoft's customers, especially in the government sector, prefer an open, standardized document format, and the letter defends the Ecma process that resulted in Open XML standardization.

Microsoft uses the letter to focus on the comparison of ODF and Open XML, saying, "It is important to recognize that ODF and Open XML were created with very different design goals and that they are only two of many document format standards in use today,

each of which has characteristics that are attractive to different users in different scenarios."

Observers acknowledge that ODF is nowhere near as feature rich as Open XML.

"ODF from a feature standpoint is supporting a subset of Open XML; there is a way to go on ODF," says Chris LeTocq, principal analyst at Guernsey Research. "Even if you are IBM and you are committed to ODF, you would also have to support Open XML if that is what customers ask you to do." ■



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Fiber

continued from page 8

to 50% per year from 100% or more in the heady days of the bubble.

“Back in those days, everybody was putting in as much as they could and it made sense,” says Clif Holliday, an analyst with Information Gatekeepers Inc. (IGI). “There’s probably an awful lot of excess fiber in the ground.”

According to IGI, Internet traffic is expected to grow 45% to 50% per year until 2010. The major feeders of traffic on the Internet backbone will be high-speed DSL and cable modem broadband access lines, international transactions and fiber-to-the-premises (FTTP) lines.

File sharing is a major component of high-speed traffic, and the largest segment of file sharing is video, according to IGI. But video file sharing will be dwarfed by FTTP traffic in the form of IPTV, especially high-definition IPTV, Holliday says.

“Using digital delivery of HDTV is a tremendous bandwidth hog,” he says. “It will overshadow everything else if the telcos do what they say they are going to do, and if they are successful at it.”

AT&T and Verizon are spending billions of dollars laying fiber closer to homes in order to deliver TV and IPTV service. Verizon reported 207,000 FiOS TV customers at year-end — adding 89,000 in the fourth quarter — and wants to have its TV services available to sell to 5 million homes by the end of 2007.

AT&T has less than half as many subscribers as Verizon. AT&T uses Microsoft software to deliver its IPTV services, but there are apparent issues with the software’s ability to scale over millions of homes while supporting high-definition, video-on-demand and digital video recorder service. Investment firm UBS Warburg estimates AT&T will have 93,000 Uverse video subscribers by year-end.

IPTV will not dent excess Internet capacity per se but will help alleviate overcapacity on specific routes in the facilities of some of the largest carriers of Internet traffic, Holliday says.

Pricing watch

As a result, bandwidth pricing could increase, because carriers will need to purchase equipment to support IPTV across specific

So much for a boost from video

Even though U.S. spending for video-on-demand content is expected to boom . . .

Internet streaming voice on demand spending (in millions)	2005	2006	2007	2008	2009	2010	2011	CAGR
	\$53.5	\$62.4	\$72.5	\$84.0	\$97.1	\$111.8	\$128.5	15.7%
IPTV voice on demand spending (in millions)	\$8.0	\$49.8	\$125.6	\$199.1	\$294.6	\$395.1	\$525.1	101.0%

. . . carrier revenue on wavelength services to deliver such content is expected to stay relatively flat since bandwidth supply remains plentiful.

Wavelength services revenue (in millions)	2005	2006	2007	2008	2009	2010	2011	CAGR
	\$230	\$234	\$225	\$232	\$240	\$245	\$252	1.5%

SOURCE: INSIGHT RESEARCH

fiber routes with a shortage of capacity, he says.

“Somebody could say, ‘We’ve got a lot more fiber than we need’ — that’s probably going to be true maybe forever — but that doesn’t mean that we don’t need to have more,” Holliday says. “It doesn’t make any difference how much fiber you’ve got in total in the United States. If you need to get from A to B, the only thing that makes any difference is how much you’ve got from A to B. There will be routes where you’ll see major additions.”

Global Crossing recently increased wholesale and “selective” retail bandwidth pricing by 5% to 10% because of “supply and demand equilibrium,” says Anthony Christie, director of marketing for the carrier.

Christie says this equilibrium is a confluence of several factors. The virtualization and Web-ification of enterprise applications, industry consolidation and inexpensive broadband access, which enables sharing of video files, play a role in the stabilization and increase of bandwidth pricing, he says.

As is the case with Level 3, Global Crossing finds that 50% to 60% of the traffic from its top 10 IP transit customers is “video driven,” Christie says.

Level 3 is seeing increased demand from YouTube and other companies that are aggregating user-generated content; as well as from companies looking to offer broadcast-quality content through the Internet, such as studios distributing DVDs online, and portals offering video downloads to PCs or set-top boxes.

Jeff Tench, senior vice president of offer management for Level 3 Content Markets, also sees prices for that bandwidth — be it transport bandwidth, IP transit or content distribution — stabilizing because of higher demand from

users as well as from carriers for edge applications.

That higher demand has helped absorb the capacity glut, Tench says, prompting a round of reinvestment in the network. Level 3 has been investing in its network for the past three years at both the wavelength division multiplexing and IP layers, he says.

Level 3 has also been active on the consolidation front, acquiring seven companies over the past two years.

“If you look at the price for bandwidth five years ago on a unit basis, it was not economical to distribute movies online,” Tench says. “At the current levels, people are finding new opportunities to use the Internet to shift an entire industry.”

Demand and upgrade costs to light unused fiber will help stabilize bandwidth prices, says Eric Schoonover, senior analyst at Tele-Geography. He said it would be a stretch to expect prices to increase based on video’s growth.

“I’m not sure enterprise and wholesale customers would bear an increase after so many years of precipitous declines,” Schoonover says. “But I have no doubt there will be an amount of stability that hasn’t been seen in a few years, at least. And really in the end it all comes from video.”

Video is driving the user’s experience, which is prompting providers to buy more IP transit bandwidth to handle the increase in traffic on their long-haul networks, Schoonover says. But this will not eat into fiber glut, he says.

“There’s plenty of fiber in the ground for years to come,” Schoonover says. “In terms of the long-haul major routes, they just have so much glass in the ground that they’re just going to put lasers on either end and call it a day. Most of that fiber is capable of significant DWDM deployments of

96 wavelengths per fiber pair. So you’re getting almost a terabit of data traffic per fiber pair.”

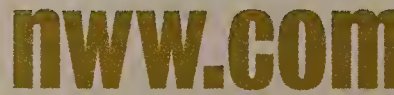
Rosenberg disagrees. Carriers will need to replace that embedded and unused glass with newer-generation strands, he says.

“This is what the industry has waited for since the 1960s,” he says. “Once you get a mass market for video telephony, that application is going to continue to suck up capacity, because whatever you gave them last week is not sufficient: I want better definition, I want better sound, I want better quality in the image.

“It will mean that the industry will begin another round of investment with a new generation of glass and a new generation of optics to be able to meet that capacity demand,” he says. “Current unutilized fiber will be obsoleted by changes in technology over time.”

What, then, is the legacy of all that unused fiber from the late 1990s and early 2000s?

“Telecom industry wasted \$100 billion putting down all those redundant long-haul fiber strands,” Odlyzko says. “One of the great tragedies is that if the \$100 billion could have been used instead to take fiber to the home, we would have had more than half of the households in the U.S. wired up with fiber.” ■



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Managing IP Telephony

Centralized vs. Distributed Architecture

Organizations expect to see cost savings from IP telephony, but according to IT executives, enterprises are actually increasing spending on these implementations. Security, application management and growing use of professional services are all contributing to increased implementation costs. How are enterprises going to realize the potential cost savings from their IP telephony investments?

A key decision is the solution architecture: Should it be centralized along the data-center model, with a few clusters of IP-PBXs coupled with remote site gateways? Or should enterprises deploy a distributed model, in which system intelligence is pushed out to all locations equally, with little to no centralized infrastructure?

The Centralized Approach: Leveraging the Data Center for Economies of Scale

In a centralized IP telephony architecture, telephony servers reside within data centers, along with low-cost branch gateways at remote sites. Branch gateways provide PSTN access for off-net calls to and from the branch, and some basic survivability in the event of a loss of connectivity to, or a failure of, the centralized IP telephony servers. Examples of the centralized approach include the Avaya® S8700, Cisco® Unified CallManager 5.x, Nortel® CS2100 and Siemens® HiPath® 8000.

A secondary enterprise benefit of the centralized approach can be reduced management costs as a result of limiting the number of devices and locating them in data centers that already house system administrators.

But a centralized architecture is not appropriate for all enterprises. Centralized systems require a great deal of up-front resources, both to architect an enterprise-wide solution, as well as to build out the infrastructure. Further, organizations often need sophisticated monitoring and management tools that can cost from \$25,000 for a small company up to \$2 million for large, global enterprises.

Perhaps most importantly, the centralized approach may not fit with enterprises that have distributed IT functions or IT infrastructures across lines of business.

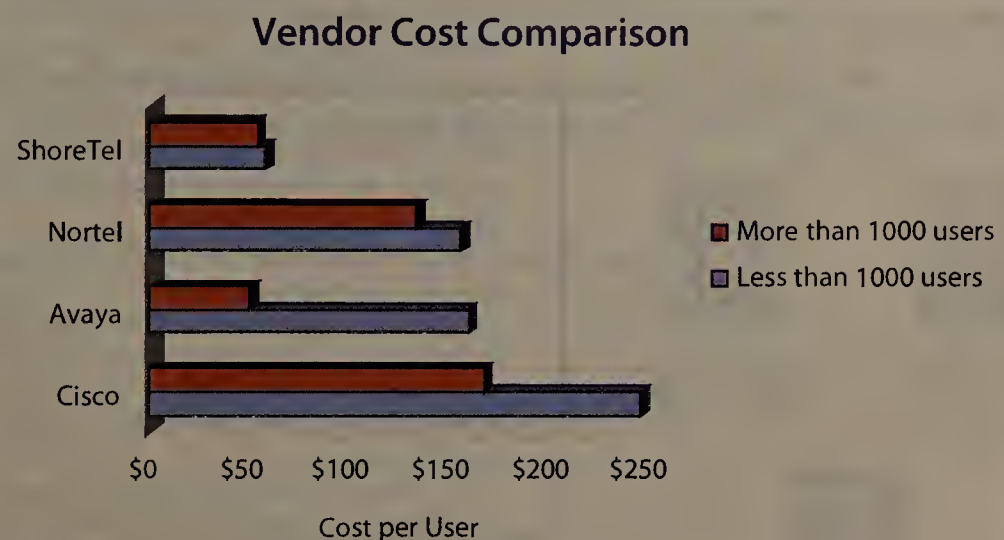
The Distributed Approach: Resiliency and Cost Reduction

An alternative to the centralized approach is one in which telephony servers are distributed to all locations. Each server peers with each other on an equal basis, eliminating single points of failure. Distributed architectures such as ShoreTel's™ IP telephony system are highly scalable—simply add another IP-PBX and it will automatically find its peers, and share the processing load. Applications such as voicemail, unified messaging, and conferencing also are distributed within each server providing additional redundancy.

In a distributed system WAN utilization is minimized. The local telephony server sets up all calls that start and terminate in the same facility, without any need to utilize the WAN. Thus the distributed model may require both less bandwidth and reduced dependence on WAN architecture.

Distributed systems are also generally more reliable since complete call processing is distributed to each location. A failure with PSTN, WAN or even a voice switch will have limited or no impact on end user service with appropriate equipment and configurations in place.

As shown in the diagram to the left, total cost of ownership can also be substantially less with a distributed system. The decreased management time and costs compare favorably to the centralized approach.



Above chart illustrates total operational costs (planning, installing and troubleshooting) of IP Telephony architecture.

Source: Nemertes Research Convergence and Next-Generation WAN Technologies, February 2006

Conclusion: Distributed Architecture for Reliability and Cost Savings

For most enterprises, a distributed IP telephony system offers scalability, reliability performance, and cost benefits when compared to a centralized architecture. Telephony systems based on distributed architectures have shown themselves to be less expensive to plan, implement, and maintain. They protect an organization from undo complexity and enable an easier migration to VoIP without an adverse impact on the WAN.

For more information please read the Network World Special Report:
IP Telephony System Manageability: Architecture Matters

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Survey says shortage puts SAP workers in demand

As firms compete for scarce talent, salaries rise

BY JON BRODKIN

A shortage of skilled SAP workers is making it difficult for IT departments to fill jobs and has caused the average salary for certain high-level SAP professionals to rise 15.6% in the past year, according to Foote Partners.

A survey by the consultancy found the average base salary for directors of SAP program management rose from \$115,468 to \$133,500 in the calendar year that just ended. This 15.6% increase dwarfs the typical increases in IT salaries of 3% to 5% a year, says David Foote, CEO and chief research officer.

"That's a monster figure," Foote says.

SAP, the world's largest enterprise software company, has 12 million users across 100,600 installations in North, Central and South America. The demand for employees who can deploy and maintain SAP software is fueled by the company's numerous products, from CRM tools to governance, risk and compliance solutions.

SAP's NetWeaver platform, which helps companies deploy a service-oriented architecture, is one of the latest factors requiring companies to have a fleet of skilled SAP employees, Foote says. "SAP is obviously a juggernaut, and they have a huge install base," he says.

Companies have largely failed to develop SAP talent in-house, and a shortage of skilled SAP workers on the open market is forcing IT departments to pay premiums to get those few who are available, according to Foote. It's not uncommon for SAP jobs to stay unfilled for nine months, he says.

"When hiring developers, analysts and configurators, it's not unusual to be faced with having to pay 20% more to attract them than the people [companies] currently have in those jobs," Foote says. "That's the price you pay for not having staffed adequately for your needs."

Although there are shortages in other IT areas, such as project management, database management and storage-area network (SAN) administration, the hiring challenges seem to be most prevalent in the SAP field, Foote says.

"As a category, SAP seems to be where we find . . . the most complaints, the largest number and the widest geographical distri-

bution," Foote says.

Like the companies in Foote's survey, the Massachusetts Institute of Technology is having problems finding SAP professionals.

MIT has a staff of about 70 SAP workers and now has three or four open jobs, one of which has been unfilled for more than six months, says Allison Dolan, MIT director of human resources and administration for information services and technology.

Hiring full-time employees is difficult because many SAP workers prefer to work as contractors or consultants, Dolan says. They like to be involved in development and initial deployment but are less interested in ongoing support of SAP systems.

Dolan says she has the same problem finding employees to manage MIT's Hyperion systems.

"People who have that skill are fairly scarce, and many of them are contractors or consultants," she says.

Nearly every time MIT hires a SAP professional, it is forced to offer salaries that are 10% to 20% higher than the college originally budgeted for, Dolan says.

SAP professionals have been able to command higher salaries than other IT workers for at least a few years, Dolan notes, pointing to research completed by Hewitt Associates in the fall of 2004.

SAP work was the most lucrative in IT at that time, exceeding systems administration salaries by 25%, the survey found. SAP work also paid more than systems integration, data warehousing, information security, Web infrastructure and network engineering.

While the laws of supply and demand are driving up the price for SAP workers, applying the term "shortage" to this situation may be misleading, says Herbert Lin, senior scientist at the Computer Science and Telecommunications Board of the National Research Council.

"If the salaries were \$10 million a year, there wouldn't be any shortage at all," Lin says. "What employers mean is 'I can't find enough people at the wages I want in order to hire the people I think I need, so I'm going to have to raise wages.'"

According to Foote, however, some employers cannot find workers even when they are willing to raise salaries. This is true in SAP, as well as SAN administration, he says. "That's another area where we have people saying 'I've got the money; we can't find the people,'" Foote says. ■

SAP salaries ahead of the pack

Pay for 143 leading IT certifications remained flat, on average, in 2006. But some key SAP positions saw **15.6%** salary hikes, according to Foote Partners.



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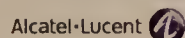
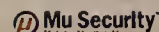
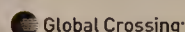


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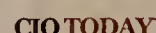
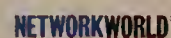
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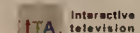
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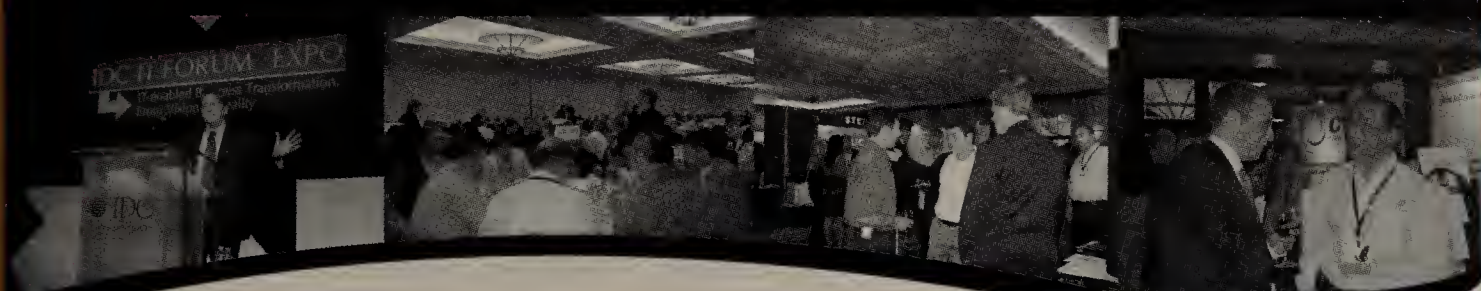
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Combating Data Theft
Darryl Lemecha, CIO, ChoicePoint

Crafting Your Strategic Sourcing Plan
Joseph Drouin, VP & CIO, TRW Automotive

The Next Generation Data Center
Scott Miggo, VP of Technology Solutions,
Nationwide Insurance
John Hinkle, CIO, Trans World Entertainment

Management Manifesto
Frank Gens, Senior VP for Research, IDC

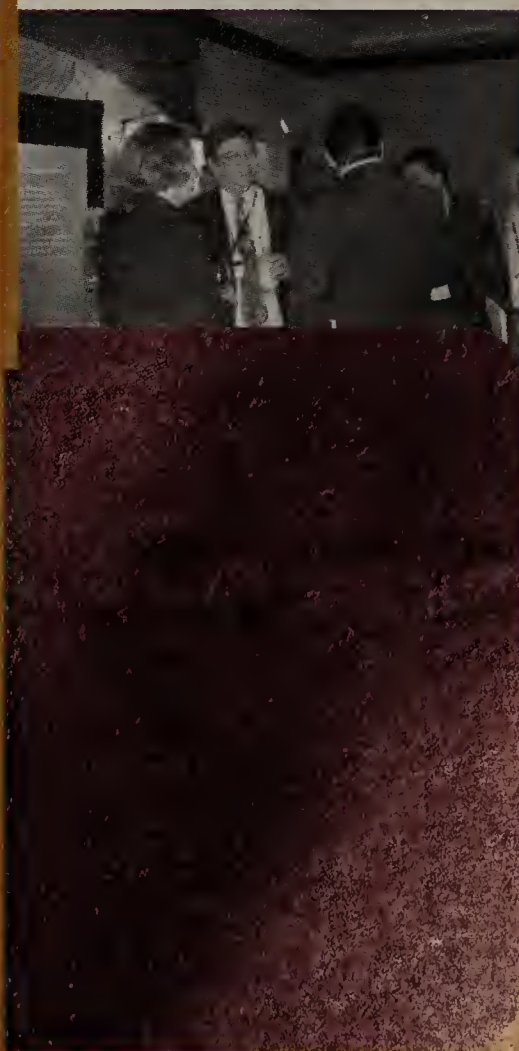
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Richard McCormack, Senior Vice President,
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Your Take

■ NETWORK EXECUTIVES SHARE THEIR WISDOM

Ton
continued from page 8

How does the company's growth affect the IT department?

When I first arrived, there were 225 desktops. We are closing in on 450 desktops. We have around 40 servers that are in our data center at Intech Park [in Indianapolis]. What we've done on the server side is to look to consolidation. It's the whole idea of growth with downsizing in mind. If we bring in a new application, we don't automatically bring in a new server. We try to consolidate, use virtual servers, that sort of thing. Negotiating volume discounts and better service levels is getting easier. Now we are big enough to carry some weight with our vendors, and we have the Lauth name that is becoming nationwide. We signed an enterprise agreement with Microsoft that's providing a lot of benefit to us as we continue to grow.

What are your staffing plans for IT?

At the time I joined, we had 15. Now we have 20. We've got some other positions that we plan on filling in 2007, which would take us to a total of 23 or 24. I don't believe we will grow much beyond that. What we are trying to do is to put controls in place so we're not growing linearly with the company. We're putting technology in place so we can support more with fewer people. I went through five years of downsizing at Thomson, so I'm trying to bring

those lessons learned to a growing company. We are growing with downsizing in mind.

What are the top challenges you face in managing the company's growth?

One is the speed at which we need to react. We're trying to be more proactive as we go forward. We spend a lot of time managing new associates when they come on and providing the training that's associated with the technol-

ogy. Another part of managing growth is continually looking at our application portfolio. We have outgrown some of our packages, and we need to look for products that are a little more robust. We're also trying to rationalize our software portfolio as we've grown. With the influx of new associates that we've had in the past few years, everybody comes in with their favorite package that they want to use.

If someone wanted to copy your idea and grow with downsizing in mind, what would you suggest?

This philosophy has to do with how you grow both human resources and technology resources. When you're looking at human resources, you've got to leverage external resources wherever you can, such as contractors and consultants. You have to decide what knowledge and skill you want to own vs. what knowledge and skill you want to get from the outside. You want to introduce technology that not only supports the departments but supports the IT staff as well, so they are able to support more with fewer people. You need to standardize on your desktop and laptop equipment and your cell phones. It's easier to support a standard desktop. It's about server consolidation and software portfolio rationalization. You need to educate [people] about why you don't want five different software packages that do mapping analytics. It's not the cost of the software; it's the support on the back end that adds up. It's about getting the message early that the business isn't always going to grow at the pace that it's growing

today. When it plateaus, the pressure on overhead costs is going to increase. You don't want to stick your head in the sand and pretend that's not coming, because it is.

Describe your IT strategic planning process.

We ran the strategic planning process for four months last year. Our goal was to not only catch up to the growth that Lauth is going through but to get in front of it. We looked at what's going to be needed five years down the road. We were wrestling with how to describe what we were trying to convey to the [management team], which doesn't know servers and networks and doesn't care to know them. We got the idea that building an IT infrastructure was much like building a building, so we put that theme into our process. We had an introduction to our strategic plan that was a set of blueprints. One of the documents that Lauth uses to make its investment decisions is called a final investment memo. Our whole strategic plan was put into the format of a final investment memo. We had our strategic plan divided into phases like site work, foundation, core, tenant improvement and future expansion — those types of things that are typical in real estate development. We used the same terminology that the guys who are making the decisions to fund this strategic plan were used to hearing. It was very well received by the Executive Forum. We went through in pretty minute detail what we were trying to do and why we were trying to do it. It was approved in September.

How much money did you ask for in the IT strategic plan?

We didn't ask for a particular dollar amount. The plan says that if we are going to get from Point A to Point B, we are going to have to increase IT funding forever. We asked for an increase in the IT budget as a percentage of revenues. The industry norm is about 2.1%. We were at 0.8%. The plan moves us from 0.8% to 1.5%. We didn't ask for 2.1% because we think that if we do this whole thing with downsizing in mind, we can achieve the same value from IT at 1.5% that other companies do at 2.1%.

How does innovation fit into your IT strategy?

When you look at Gartner's continuum of IT value, you start at the very left side with utility and you go all the way to the right side with profit generator. We're trying through our strategic plan to move from left to right. We are looking at how a traditional IT department can add value to the product side of the house, which is building buildings. We can help Lauth build buildings to support [emerging technology.] Smart buildings, green buildings. I'm trying to figure out where they fit in Lauth's business model and whether there are problems that our department can be solving. Obviously, if you want to build wireless into a building, you want to make sure that the materials you are using don't prohibit the wireless signals. Those are the types of things where our expertise could be beneficial.

You don't like to talk about business-IT alignment. Why?

We don't build IT systems. We build buildings. When we presented the IT strategic plan to the IT department, we handed everyone a hard hat. This was something I wanted to drive home to our team. We're trying to take the whole business-alignment concept out of our everyday thinking and out of our terminology. We try very hard not to refer to "the business." We are the business. We refer to the other departments, but we try not to create a situation where it's the business versus IT. The business departments are hungry for us to provide new ideas from a technology prospective. I really believe that from an IT guy's perspective, this is a once-in-a-lifetime opportunity. ■

Getting personal: Jeff Ton

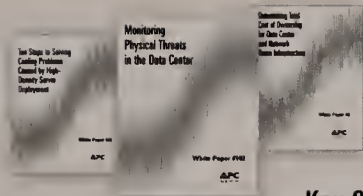


Organization:	Lauth Property Group
Title:	Vice President of Enterprise Processes, Information & Technology.
Responsibilities:	Oversees a unit that used to be three; it includes project management, desktop and server support, and IT infrastructure.
Tenure:	Since March 2006
Previous jobs:	Held various posts with consumer electronics giant Thomson, including director of enterprise services centers and applications manager. Previously worked as a software and computer consultant and programmer.
Annual IT budget:	\$5 million
IT staff:	20
Last good management or IT book read:	<i>The Oz Principle</i> by Roger Connors, Tom Smith and Craig Hickman. It's about improving team accountability.
First experience with the Internet:	"I was a mainframe dinosaur. The first time I used the Internet was in the mid-1990s. I was at home doing research."
IT setup at home:	A standard desktop with a broadband cable connection and wireless.

The things you won't find in print Read an expanded version of the interview. www.nwdocfinder.com/7439

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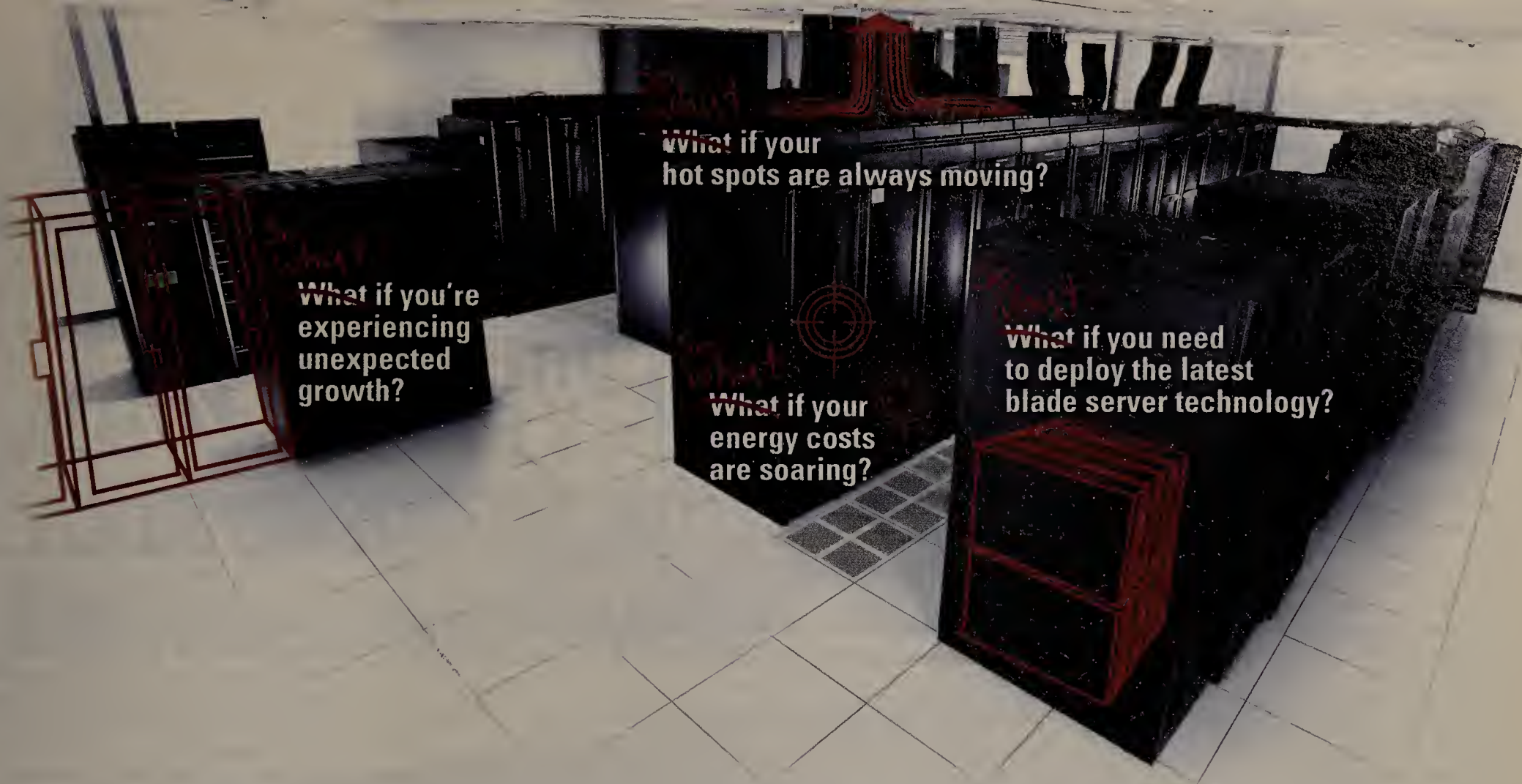
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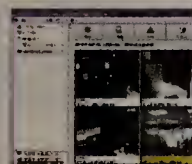


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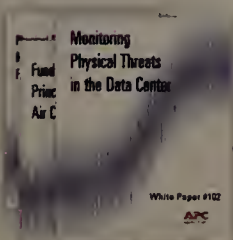


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TECHNOLOGY UPDATE

■ AN INSIDE LOOK AT TECHNOLOGIES AND STANDARDS

Understanding delta compression

BY SAXON AMDAHL

While WAN-compression solutions have been around for years, new compression advances have resulted in previously unheard of gains in bandwidth savings. Delta compression, commonly referred to as segment caching or byte caching, leverages pattern-matching techniques and large persistent dictionaries to dramatically reduce the amount of data sent across the WAN.

Delta-compression systems are symmetric, which means they require components, either software or hardware, on both ends of the network. In almost all cases, the server-side component is a dedicated appliance and the client-side component is a software module installed on the PC or an appliance deployed in the data path.

Software client-based systems have the advantage of requiring hardware on only one side of the link, making the approach suited for deployments in which there are only a few users per location. However, this flexibility comes at a cost. Client-based compression systems are limited in that they operate only on the data sent to that particular client. A file downloaded by a client therefore provides no benefit to other users. Furthermore, client-based compression systems require an additional download during initial application access. This download degrades first-access performance.

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Top five benefits of session layer delta compression

- 1. Very high compression ratios:** Compression ratios of 100:1 on repeat file transfers are possible.
- 2. Protocol agnostic:** Session layer delta compression provides acceleration benefits for all application protocols.
- 3. Provides benefit during file edits:** Delta compression accelerates the transfer of modified files.
- 4. Access control/security left intact:** Session layer delta compression is transparent and therefore compatible with an existing security infrastructure.
- 5. Never delivers stale data:** Delta compression sends all requests to the server.

While appliance-to-appliance delta compression requires hardware at both ends of the network, it offers significant performance advantages over client-based deployments. First, appliance-to-appliance delta compression allows cross-user benefit. When one user downloads a file, the transferred bytes can be used to compress the same file when it is requested by a second user. Additionally, symmetric appliance deployments have no first-transfer penalty because no client code has to be installed. Finally, symmetric appliance deployments provide benefits not found in client-based systems, such as QoS capabilities.

In addition to hardware and software deployment techniques, delta-based compression can be achieved at different network layers. Some systems operate at lower layers of the OSI model, while others operate at higher layers. The layer of operation has a significant impact on compression effectiveness.

IP- or TCP Packet-based (Layer 3 or Layer

4) compression systems buffer packets that are then compressed one at a time or as a group and sent to the decompressor. The primary problem with Layer 4 compression is that it compresses packets individually or mixes different data types together. Both of these options negatively affect the final compression ratio.

One alternative to packet-level compression is application layer-based (Layer 7) compression. This approach involves buffering the server's response and then computing a delta between the current response and a reference response. This reference response can be thought of as a typical response for the current request.

This approach improves compression ratios by extending the scope of the delta operation from the packet to the entire application response, but limits the benefits to one protocol. Furthermore, application-layer compression only performs a delta between a single reference response and the cur-

rent one. As a result, the amount of data that can be drawn from is limited, which dramatically impacts overall compression ratios.

The ideal compression solution operates at the session layer (Layer 5). This allows it to apply compression across a completely homogeneous data set while addressing all application types. Furthermore, session layer operation eliminates packet boundary limitations. This makes it easier to find long matches in the datastream.

Overall, the most critical consideration when comparing delta-compression systems is throughput. While achieving a high compression ratio is important, maximum throughput is vital to improving application performance. Delta-compression systems often achieve compression ratios of 95% or higher. To fully translate this bandwidth reduction into performance, the system needs to operate at 20 times the WAN speed.

In conclusion, the performance gains from a given compression technology can be assessed by considering the technology's expected compression ratio, the devices' peak compression throughput and the network bandwidth. Too low a compression ratio and the network will remain saturated and performance gains will be minimal. Similarly, too low a compression speed, and the compression device itself becomes the bottleneck.

Amdahl is a technical marketing manager at F5 Networks. He can be reached at s.amdahl@f5.com.

Ask Dr. Internet

By Steve Blass

What options exist for presenting multiple remote RSS feeds on a single Web page in order to publish a shared news portal on a Web site?

There are a number of free RSS feed-conversion Web services, such as www.rss-to-javascript.com, where you can type in the Web address for an RSS feed to get a copy of JavaScript code that you can put in a Web page to retrieve and display the updated feed when the page is visited. These services

typically route feed requests through their own RSS gateway. If you are using a content-management system, check whether your software already supports publishing news-aggregation pages on the Web site. If you use Macromedia Dreamweaver, an extension is available from www.rnsoft.com for placing RSS feeds inside Web pages. You can find a source-code example of using JavaScript to retrieve and display RSS content from your own server at www.nwdocfinder.com/7326.

AJAX JavaScript is limited to requesting informa-

tion from the server from which the page was loaded, so displaying remote feeds requires a gateway program or proxy service on the Web server to retrieve content from remote systems. The free RSS Display Boxes software from www.dynamicdrive.com uses PHP on the server and JavaScript on the client browser to support the placement of multiple RSS feeds in HTML DIV sections on Web pages.

Blass is an IT manager in Phoenix and can be reached at dr.internet@jschnee.com.

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Security: Risk & Reward

Andreas Antonopoulos

Does it take 200 products to secure the enterprise?

Visiting the recent RSA '07 security confab, I tried to embrace the fact that this security conference is no longer an insiders' gathering, and tried to put myself in the shoes of a newbie to figure out what I should pay attention to in a new security job.

The first mistake I made as a newbie was to wear new shoes: ouch. The second was to try to take all of the show in. If you accept the premise that security should be holistic and not about silver bullets, then the RSA show floor was a big bucket of silver bullets.

Hundreds of features disguising themselves as products, loudly touting the latest scare: "Did you know there are ogres lurking in this obscure part of your infrastructure? Anti-OGRE!" It was difficult to see what the big new theme for security is in 2007.

If I were to take each offering at face value, what would I need to deploy in my enterprise to secure against all these threats? Viruses, worms, rogue wireless, stolen identity, leaked secrets, privilege escalation, zombie armies — none of these is outside the scope of the threats an enterprise faces.

I would put in six to seven appliances around every switch, a few more in front of my egress routers and a couple dozen servers in the data center to crunch all the data. I would have a management console for each product and a separate set of policies. All of the different products would send a stream of logs and reports to as many as a dozen consoles.

The security industry is suffering from an innovation model that is driven by an arms race. Let's face it, most of the R&D that matters is done by "them." The security innovation is almost always reactive.

So every now and then, as new threats emerge, a dozen start-ups pop up to address that one tiny niche. It takes about a year or two for these smaller companies to be acquired and integrated into monolithic security suites. And the cycle continues.

While this model may work for the industry, it doesn't seem to work for the customers who report feeling insecure and are getting breached despite billions of dollars of spending over a decade and a half. The missing ingredient is not integration, but interoperability. This industry needs to replace single-vendor, tightly coupled integration with multi-vendor, protocol-based interoperability.

Antonopoulos is a senior vice president and founding partner at Nemertes Research, an independent technology research firm. He writes Network World's security column and data center newsletter. He can be reached at andreas@nemertes.com.

Opinions

Fix for Windows problem

Regarding Mark Gibbs' latest Unfathomable Windows Problem: "How does Windows and its Start menu get screwed up to the point where opening the Start menu and clicking on Programs or Settings results in the playing of the Windows alert sound and nothing else?" (www.nwdocfinder.com/7421): There is a simple fix for this problem.

Remove the system drive, place it in a working Windows system and back up all files. Replace the drive and reformat it. Reinstall Windows, download and apply 48MB of security and bug patches. Download and install hardware drivers. Reinstall all applications. Download and apply application updates. Copy backed-up user profile and documents into the myriad of appropriate 12-level-deep, nested folder locations. Locate and rename the Hatten Bold font file (Microsoft actually had me do this to fix a failed Office upgrade). Buy a Mac and migrate your files to the Mac.

Dell tech support informs me that another possible fix is the Initialize Array command, which they recommend early and often.

Jim Magruder
Network engineer
Digital-DNS
Greenville, S.C.

Inside job

Regarding "The 7 best practices for network security in 2007" (www.nwdocfinder.com/7422): Yes, it's important to lay out corporate security policies, but these days that's just not enough to protect organizations from inside threats. Data theft and internal security breaches through the use of portable storage devices, such as iPods, USB sticks and digital cameras, are on the rise and can catch

organizations with their pants down.

Moderated lockdown of a network's endpoints is vital, and organizations should consider investing in a good endpoint-security package.

Edward Lansink
Cary, N.C.

eBook reader

Regarding Mark Gibbs' Gearhead column "Almost as good as paper" (www.nwdocfinder.com/7423): I use my Palm TIX and its eReader program to read eBooks. I am not sure if this is a proprietary format, but I find the 2 1/8-by-3 1/8-inch rotatable screen very easy to read. There are four font sizes, even the smallest of which is easy to read. The program includes all the expected reader features, including bookmarks, searches and management of multiple books. I have downloaded and read dozens of books, and enjoy reading eBooks on my Palm.

As the font or orientation is changed on the Palm, the book is reformatted, and all bookmarks remain at their proper location. I find it very handy to have several books right in my pocket, ready for when I have some free time to read.

One of the interesting features is that the purchased and downloaded eBook, available through the Palm eBook portal, is secured with the credit card number used to purchase the book. This prevents someone from passing the file around.

What features would I like? A bigger screen would be nice, but that would defeat the original purpose of the pocket-size Palm TIX. I would like to see more books, new and old, available in eBook format.

Bob Ackerman
Kirksville, Mo.

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The telework effect

BY ANN BEDNARZ

Growing numbers of employees are becoming teleworkers, at least part time. Just in the last two years the number of Americans whose employer allows them to work remotely at least one day per month increased 63% to 12.4 million, according to a report from WorldatWork, an international association of human resources professionals.

I wondered what that means for enterprises' WAN optimization and application acceleration strategies.

Home work

In the last two years, the number of Americans whose employer allows them to work remotely at least one day per month increased 63% to **12.4 million.**

SOURCE: WorldatWork

Certainly a trend among vendors has been to create performance-enhancing technologies geared for smaller corporate sites. So-called "branch in a box" appliances from Blue Coat Systems and other vendors combine server and WAN optimization controller (WOC) functions to boost application availability and response time for remote employees who need access to centrally run systems and processes.

These appliances are intended for installation in multiple distributed sites where IT assistance is likely scarce, so it seems feasible for a company to deploy such a device in the home of a full-time telecommuter who needs better performance.

But that logic doesn't hold true for the armies of employees who only intend to telework occasionally — one day per month is hardly justification for placing an acceleration device in the home.

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To tackle this population, vendors such as Intelligent Compression Technologies and Stampede Technologies are offering WAN optimization software geared for laptops and consumer

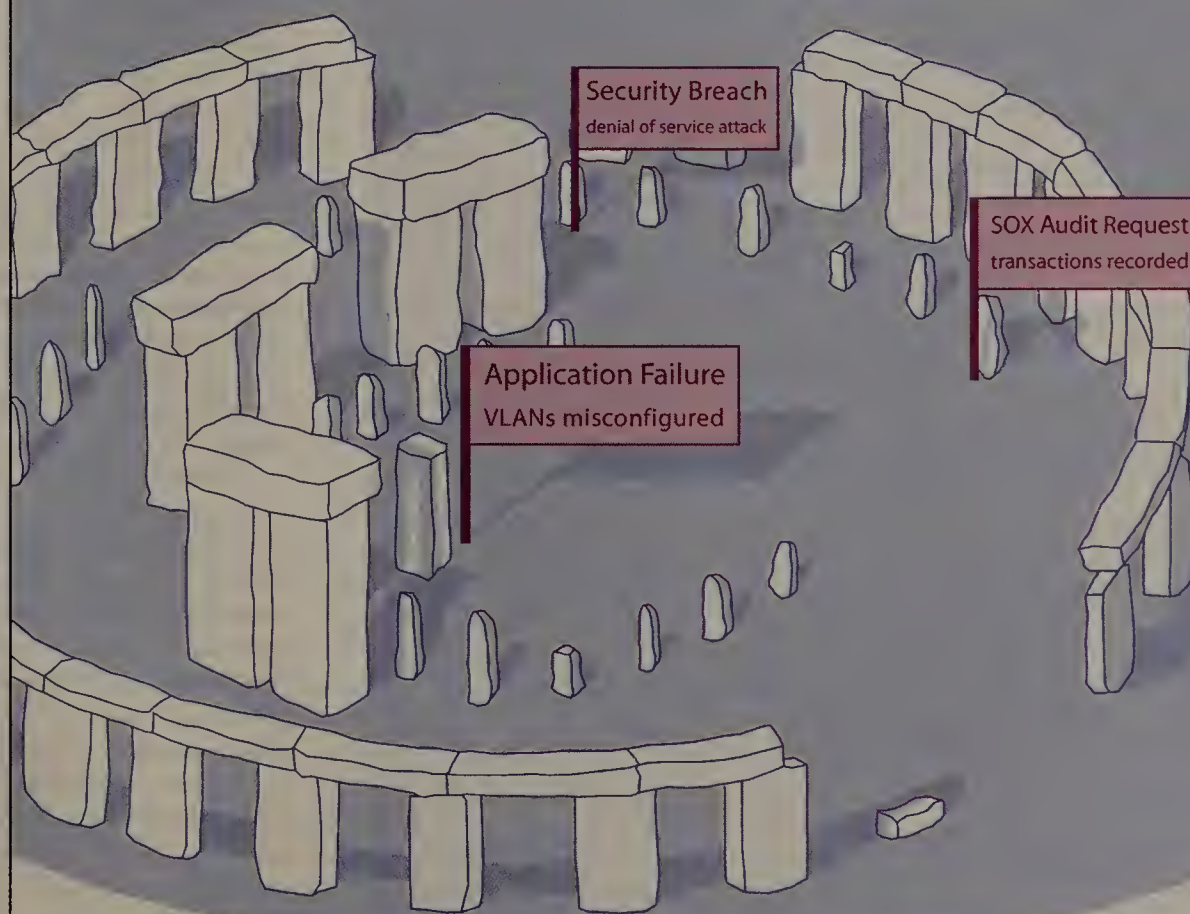
broadband connections. Gartner predicts the industry will see growth in such "soft WOC clients" that allow single remote PC users to take advantage of key WAN optimization capabilities.

These products are still in the early stages, for the most part, and it remains to be seen how quickly they might catch on. I'd be interested in hearing from early adopters who have found

a solution for boosting WAN performance for home-based and mobile employees.

If you'd like to share your experience, please send your comments my way. ■

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Over the last three years, the New Data Center concept has reached star status — and deservedly so. The flexibility, reliability and resiliency enabled by foundational New Data Center technologies such as automation and virtualization have let enterprises usher in big cost savings, much-improved productivity and cool business differentiators.

In this first of our six-part, fourth annual New Data Center series, we take a stroll down the concept's walk of fame. It all starts with technological innovation, which we highlight at the right, with a look at 10 of the best products to fall under the New Data Center marquee, and inside, on page 29, with a selection of advanced open source wares.

Of course, the walk of fame features stellar examples of enterprise best practices and more. Beginning on page 32, you'll find:

- **Best practices for building a Linux grid.**
- **Top tips for implementing an enterprise service-oriented architecture.**
- **A heads-up on a great New Data Center career opportunity.**
- **A status report on how automated IT is today.**

Even more on the New Data Center is available online at www.nww.com/supp/2007/ndc1. At this special site, you can participate in forums, get the latest expert insight, use our extensive archive to search New Data Center topics and more.

As 2007 unfolds, we'll be highlighting more great New Data Center technologies, case studies and expert advice. Stay tuned for our look at the latest in security technologies and trends, including the growing specter of the insider threat, coming in the March 19 New Data Center issue.

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best

Innovative and enterprise-shifting, these New Data Center wares are tops

BY JOANNE CUMMINGS

VMware's Infrastructure 3

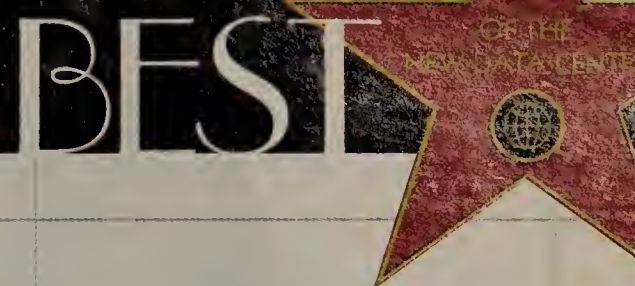
Few New Data Center architects need an introduction to VMware server-virtualization software, but some might not be familiar yet with the latest version

— VMware Infrastructure 3 (VI3), which offers increased power for virtual machines, upping the symmetric multiprocessor support from two to four processors and increasing the overall memory limit from 4G to 16GB. Additionally, VI3 rounds out storage support with iSCSI and network-attached storage interfaces.

The VirtualCenter management tool also has become significantly better with the new release. It now supports resource-pooling and automated distribution of server and storage resources on the fly. Plus, it now includes a distributed-resource scheduler that load-balances and distributes resources to virtual machines, and VMware HA, a high-availability feature that moves and restarts virtual machines off failed hardware. Longtime user Bruce McMillan, manager of emerging technologies at Solvay Pharmaceuticals in Marietta, Ga., says he especially likes the latter feature. "In the past, if an ESX Server went down, I'd have to go into VirtualCenter and manually start up another one," he says. "With VI3 and HA, it's all automated. That's huge."

Tangosol's Coherence

What if you could move and access data as quickly and as easily as you can deploy a virtual machine? That's the idea behind Tangosol's Coherence. The software, which runs on most commodity servers, provides in-memory data management for high-transaction applications, thus eliminating delays that might result from fetching data from a disk or storage area network. Because Coherence runs on multiple servers in a fault-tolerant, clustered fashion, as you add or remove servers, the cluster dynamically reorganizes itself and all the information that it's managing," says Cameron Purdy, Tangosol's CEO. That information is virtualized



products

across those servers, making it available to applications seamlessly as needed.

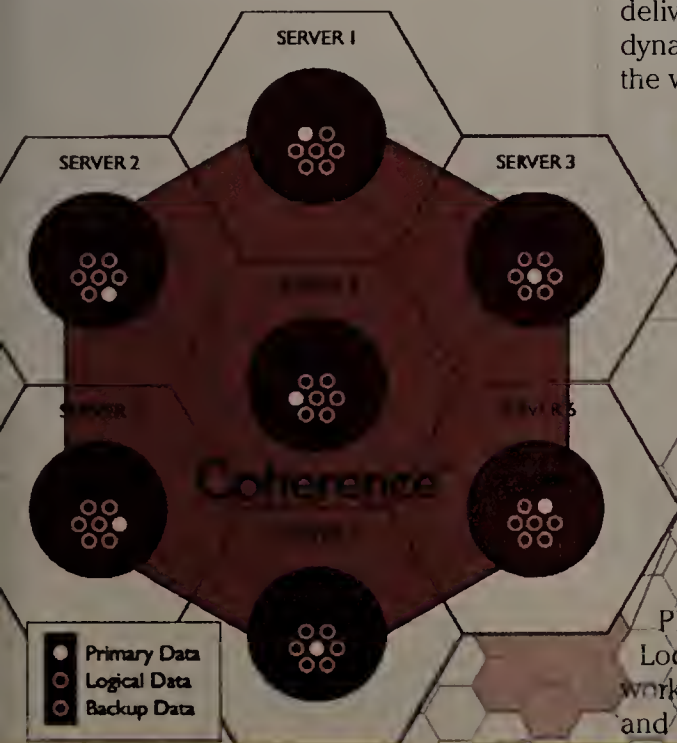
Wachovia Bank, a financial services firm in Charlotte, N.C., is making good use of Coherence's on-demand capabilities. The bank uses another best product, DataSynapse's FabricServer, to virtualize its Java applications across the enterprise and to broker computing supply and demand, ensuring that each job is performed by the best resource (www.nwdocfinder.com/7523).

"But FabricServer can't leverage the memory of many machines at once, and it doesn't synchronize the data. I need that kind of transactional capability and management, and Coherence solves that problem," says Tony Bishop, director of product management at the bank. With Coherence, performance has improved by as much as 100 times, Bishop says.

DataSynapse's FabricServer

DataSynapse's FabricServer is all about matching processing needs to

Tangosol's Coherence provides data virtualization across multiple servers.



computing resources on the fly. The software provides a control layer that acts as a broker between applications and their computing resources, essentially virtualizing applications so they can be processed by the best available resource. A centralized broker in the software employs user-defined rules to determine that allocation. If an application is deemed time-sensitive and mission-critical, for example, a rule would determine that it be processed only by the fastest, most powerful servers in the data center. Software on each pooled resource communicates with the central server to identify available CPU memory and processing power, says Shayne Higdon, a DataSynapse vice president.

"If I have memory-, CPU- or I/O-intensive stuff, but I know I have a better machine over here that could run it faster than what it's on, I can just allocate it there, since I'm virtualizing the demand and matching it up. FabricServer understands that a service can change its size and shape at different times of the day, week or month, and adjust for that," says Wachovia's Bishop.

"The [Coherence-FabricServer] technology combination has exponential impact in terms of performance and time to market," Bishop says. "Not only do you drive efficiencies, but you can deliver new business capability in a dynamic, real-time manner. It changes the whole paradigm."

Newbury Network's Presence Platform

As much of a blessing as mobility can be, keeping track

of personnel and resources and securing the network can be a curse. Newbury tackles the curse head-on with Presence Platform, based on the firm's Location Appliance. The appliance works on any vendor's wireless LAN and tracks any device sporting a



Newbury's Location Appliance helps keep track of nonstationary assets.

WLAN card. It also tracks items more specifically via radio-frequency tags. Newbury provides key applications including location-based content provisioning; or users can use Presence Platform to build custom applications.

"Customers build different rules about what kinds of wireless devices can be active where, and then they can control access to the network based on where users are," says Brian Wangerien, vice president of marketing at Newbury. "So in a hotel, you can provide different access and billing whether you're in a conference room, a lobby or on the concierge floor."

Martin van der Meer is the information adviser at Medisch Centrum Alkmaar (MCA), a hospital in the Netherlands. MCA, which has a Trapeze Networks WLAN, uses the Newbury appliance to blanket its 1,200 users and 200 wireless devices, such as laptops and PDAs. By integrating location information with the Electronic Nurse File patient-tracking system, the hospital makes sure each nurse matches up with the right patient. "With Newbury, the nurses get a short list of patients in our Electronic Nurse File, depending on which room they are in at the time," van der Meer says. A nurse selects a patient and accesses the relevant medical records, rather than having to scan a bar code on a patient wristlet.

Incipient's iNSP

Storage virtualization became a lot more interesting last September, when Incipient launched its iNSP software.

Running on a storage blade within a Cisco director-level switch, the software offers data migration between heterogeneous and tiered storage environments, all while the arrays are online.

Although storage vendors have been offering similar wares, until now they worked only within their own switches

and arrays.

By moving the storage intelligence off the array and onto the network in a vendor-agnostic way, and by allowing live data migration, Incipient opens many options for its customers.

Bart McDonough, director of systems architecture at a hedge fund in Stamford, Conn., has been beta-testing iNSP.

"Incipient allows us, behind the scenes and in real time, to migrate data over to another array. We can get all the storage off Array A, do maintenance, power it down, do firmware, test it and make sure it's good, all before we start moving the systems back to it. And the production applications aren't affected. It's great," he says.

As much as he likes the high availability, which makes no array a single point of failure, the productivity factor is what sold him, McDonough says. "Bringing down one of our big arrays for maintenance ... requires a lot of coordination, and a lot of weekend work for my staff. With Incipient, all of this could be done during the workday. That's a huge productivity hit we could avoid."

Tideway Systems' Foundation

In large organizations with multiple data centers, inventorying which systems and

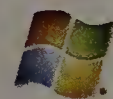
applications are running where — and how they've changed — can be a monumental task. Tideway Systems' Foundation, a configuration management database-based application discovery-and-mapping tool, provides that information and more on a daily or even hourly basis. The agentless tool finds every application instance — whether known to IT or not — and maps it to any application dependencies on the network, showing users at a glance what's running and what's changed. With that information, users can make proactive, intelligent decisions, knowing in advance the effects of any changes they may make.

Tideway "helps us manage change and improves our ability to spot and analyze problems across the environment," says Stephen Ashton, London CIO at

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The Highly R

VOLUME 1 - ISSUE 2



Windows Server 2003

For all stories go to

WINDOWS SERVER TAKES CHECKERED FLAG OVER LINUX



Tom Nagy for The Highly Reliable Times

THE CONTIDROM, CONTINENTAL AG's storied test track located near Hanover, Germany.

Microsoft

Reliable Times

www.microsoft.com/getthefacts

special edition

New System Gives Global Automotive Supplier 99.9% Reliability

By MICHAEL BETTENDORF

HANOVER, Jan. 2007 – “We needed rock-solid reliability, and we weren’t getting it from our legacy infrastructure,” says Paul Schwefer, CIO at Continental AG, one of the world’s largest automobile suppliers with over 85,000 employees worldwide. Inadequate management tools made it difficult for Schwefer’s team to keep system uptimes at the high levels expected at Continental AG, so a change in platform was necessary.

Initially, a Linux solution was considered. However, after a thorough evaluation, Schwefer’s team determined that Linux could not deliver the reliable, predictable environment Continental AG required. Instead, they chose Microsoft® Windows Server® 2003.

With key features of Windows Server 2003 such as group policy management, Schwefer found clear advantages over a Linux-based solution. “Windows Server provides a reliable environment with centralized administration and management,” said Schwefer, who believes that superior manageability leads to high reliability. “Duplicating this level of service in a Linux-based environment would have been very difficult and more costly,” he says.

The decision has proven successful: Since the implementation, Windows Server 2003 has provided 99.9% reliability in a distributed environment for Continental AG. For the full Continental AG case study, plus other case studies and independent research findings on the reliability of Windows Server versus Linux, visit microsoft.com/getthefacts



BREAKING NEWS: Reliability linked to cheerfulness in IT professionals

In a trend with global implications, IT professionals such as Continental AG CIO Paul Schwefer show obvious signs of exuberance (see above) due to high Windows Server reliability.

“Windows Server provides a reliable environment with centralized administration and management. Duplicating this level of service in a Linux-based environment would have been very difficult.”

— Paul Schwefer, CIO, Continental AG

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Products

continued from page 25

Dresdner Kleinwort, a global investment banking firm. Ashton says he scans his environment weekly but could do it on a daily basis if necessary.

Tealeaf Technology's CX

How do you control customers sprinkled all over the Internet and outside your environment, and make sure the performance and service levels they receive meet your expectations? The Linux-based Tealeaf CX network appliance monitors HTTP and Secure-HTTP streams, then "sessionizes" that data, correlating user requests and network responses to build a single-user view of an individual Web session, the company says. IT sets alarms and thresholds, and is notified when users receive site errors. In addition, a "playback" capability lets IT view exactly what a Web customer did and saw throughout a session. This lets Web businesses focus their time on only the biggest, most money-losing errors. Esurance, an automobile insurer, uses Tealeaf in testing new features before they go live, in troubleshooting site problems and in customer service. "Using Tealeaf, we can look up by an e-mail address or different identifiers and pull the session and replay it. It's like a miniature movie. It's invaluable for troubleshooting," says Marj Hutchins, director of Internet operations at the San Francisco firm.

Composite Software's CIS

Whether their legacy databases and systems are ready or not, enterprises are moving to virtualized environments. Composite Information Server (CIS) works to virtualize data queries, letting companies cull data from various repositories without going through lengthy integration or data-warehouse initiatives. A multithreaded Java application, CIS noninvasively accesses data from disparate sources; combines, abstracts and simplifies it; and delivers it via Web services or relational views.

Enterprise Architect Gary Lien uses CIS to provide a single view of members of Life Time Fitness, a health club company in Eden Prairie, Minn. "We can build a single view of data from our cafés, spas and club point-of-sale systems. Without CIS, we would have

had to query the data sources and combine the results using a J2EE application, which would have been difficult."

Mimosa Systems' NearPoint

Continuous data-protection products, which perform live data backups without affecting performance, and archive the data so it's easy to retrieve, have become a New Data Center staple. NearPoint uses an agentless technology called transaction logshipping to capture every e-mail, document and file in an Exchange system. Self-service features let users retrieve e-mail without IT intervention. "We looked at several archiving products, and Mimosa was ahead of the game," says Andrew Gahm, network architect for IS at Virtua Health in Marlton, N.J. "Everyone else was using journaling for archiving, which isn't the most effective way to archive your e-mail because it misses so much. Mimosa's logshipping captures every bit of detail that's in your e-mail, without impacting your Exchange server."

A10 Networks' IP-to-ID Service

Just because you know an IP address is generating malicious traffic doesn't mean you can pinpoint the cause of the problem. A10's IP-to-ID Service, working with the company's IDSentrie appliance, eases the identification of network users and devices, and cuts the time it takes to identify and correct problems. IDSentrie drops on a network, establishes links to its directory services, and creates a virtual data store to view those directories. Once a device or user authenticates to a directory, the service takes that directory information and correlates it with the media-access-control address and IP address to develop accurate identity information for the user at that IP address — in real time. The service is relatively inexpensive, and its simplicity is the real selling factor, says Asad Sarabi, vice president of IT and logistics at Etón in Palo Alto, Calif. "When I see my network is slow or I have a problem, with A10 I can easily, within 10 or 15 minutes max, pinpoint what application, user and device are the cause."

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@comcast.net.

6 open source gems

These tools offer an affordable path to some of the best emerging technologies

BY JENNIFER MCADAMS

The open source movement is fertile ground for creating advanced tools and technologies — all at an appealing price. We've scoured the market to find six open source projects that hold promise for your New Data Center architecture. They offer automated provisioning, intrusion detection, grid storage, network-attached storage, messaging for a service-oriented architecture (SOA) and secure telephony.

1

Cleversafe Dispersed Storage

Distributor:

Cleversafe, www.cleversafe.com

What it is:

Grid storage software and a managed service.

What it does:

- Backs up data using a public grid over the Internet and managed storage facilities.
- Provides data backup by slicing up each data unit (files, for example) and sending the slices to as many as 11 locales.
- Increases the chances that attacks or deficiencies in data storage won't compromise enterprise data in its entirety, because information is spread across multiple locations.

What the experts say:

"There are different types of applications that can use this type of storage. However, Cleversafe founders openly admit that the public grid is not yet ready to support transaction-oriented applications, because performance may not meet the requirements of these types of applications. Those wishing to hold off on the public grid experience may opt for an internal storage grid using Cleversafe's grid client and server software," says Illuminata analyst John Webster, who names Cleversafe as a company to watch among new storage service providers.

What you should know:

- First alpha version was released in April 2005; an additional release is likely before March.
- Uses information-dispersal algorithms that parse the data being backed up into data slices that are stored separately but can reunite easily.
- Protects against data loss if one location goes down, because only a majority of the slices are needed to restore the data, developers say.
- An API connects to applications, including open source backup tools BackupPC, Bacula and Amanda.
- Integrates with commercial backup solutions, such as Symantec's Veritas BackupExec and NetBackup, and EMC's Legato Networker.
- Suitable as spare storage capacity or a backup alternative.

2

FreeNAS

Distributor:

FreeNAS: The FreeNAS Server, www.freenas.org

What it is:

Network-attached storage (NAS) software developed using FreeBSD 6 Unix.

What it does:

- Lets ordinary PCs act as NAS servers.
- Provides NAS services, including file sharing via Common Internet File System, FTP and Network File System.

What the experts say:

"If you're looking for a good-enough NAS system, FreeNAS gets praise from several people," says analyst Michael Coté at market analysis firm RedMonk. Coté is tracking FreeNAS as it makes its way to official Version 1.0 status, at which point he believes the software will hold real promise for the enterprise. "It supports or is planning on supporting a wide array of protocols, authentication stores and monitoring. Once FreeNAS reaches 1.0 and has been road-tested, it has the real potential to be an open source alternative to commercial NAS providers," he says.

What you should know:

- Currently available only as a beta release, although the latest version (0.68) packs such new features as experimental RAID data-storage functions and bug fixes.
- Accommodates DeltaCopy open source backup utility software.
- Includes no management features, such as SNMP or network alarm monitoring.
- No commercial support available.
- NASlite is a related commercial project aimed at smaller businesses considering modifying fixed disk drives and turning older PCs into NAS file servers.

3

GNU Telephony

Distributor:

GNU Telephony, wiki.gnutelephony.org

What it is:

A series of development tools, libraries and programs for creating telephony applications, such as secure VoIP calling.

What it does:

- Works with the open source telephony server GNU Bayonne to inject telephony into existing applications.
- Introduces secure VoIP calling functions in the real-time protocol (RTP) stack and at the application level through specification protocols XML-Remote Procedure Call and Simple Object Access Protocol.
- Lets users manage their own encryption keys and thereby engage in end-to-end encrypted communications.

What the experts say:

"For all intents and purposes, open source VoIP technologies can today do the same thing as proprietary systems. Technologies like GNU Telephony provide innovative tools for building low-cost telecommunications infrastructures, demystifying technologies and fostering waves of technological revolution," says Sascha Meinrath, executive director of the CUWiN Wireless Project, a nonprofit that promotes community-owned networks.

What you should know:

- Includes GNU Common C++ framework to support threading, sockets, file access and other custom services.



- Future releases will focus on applications for telecenters and new libraries, and on platforms with which enterprises can create and deploy telephony applications.
- Interoperates with compliant RTP- and Session Initiation Protocol-based devices, phones or services, though it is not necessary to make the entire infrastructure RTP-compliant.
- Several Linux VoIP softphones incorporate GNU's RTP stack, including the Twinkle client.
- Works with open source PBXs Asterisk, OpenPBX and FreeSwitch.
- Tycho Softworks provides commercial support for Bayonne and GNU Telephony.

Mule

Distributor:

MuleSource, www.mulesource.com

What it is:

An enterprise service bus integration platform that provides messaging without additional "donkey work," that is, manual, repetitive coding.

What it does:

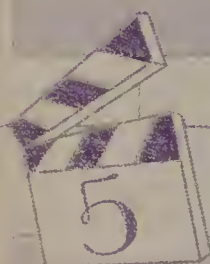
- Provides the messaging backbone of an SOA.
- Eases introduction of new applications.
- Speeds efforts to modernize legacy applications.
- Supports more than 30 transports and technologies, such as Enterprise Java Beans, Java Messaging Service, Java Business Integration, Web services and mainframe applications.

What the experts say:

"The tool seems to strike a nice balance between simplicity and performance — a target that many application infrastructure vendors don't effectively aim for, since they are so intent on sophistication and options over simplicity and raw performance," says Jonathan Eunice, principal IT advisor at Illuminata.

What you should know:

- Requires basic Java and XML skills.
- Mule 2.0, scheduled for release in the second quarter of 2007, will include internal clustering capabilities, better repository support, patch management and other improvements.
- Partner companies wrapping in Mule include open source document-management company Alfresco Software; C24, which offers objects support packs; Hyperic; JasperSoft; and MySQL.
- Subscription-based support and related software are available directly from Mule developers.



OpenQRM

Distributor:

Qlusters, www.qlusters.com

What it is:

Automatic, policy-based provisioning software for physical and virtual servers.

What it does:

- Assigns users and applications to specific servers according to defined policies.

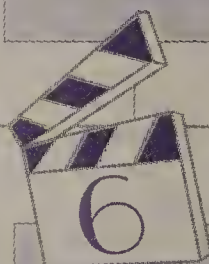
What the experts say:

- Adjusts server loads dynamically in response to usage.
- Redeploys applications during maintenance and other periods of downtime, and provides automatic failover if a server dies.

What you should know:

"If something happens to our production application or kernel or physical machine, openQRM deprovisions and reboots the node and brings up a spare node using the same image and IP address. Total downtime is three minutes. We are able to react quickly to application issues as they occur," says John Shaw, vice president of operations at Tradeware Global, an electronic trading solutions company in New York. The company has used the open source tool extensively — harnessing openQRM to 15 IBM x336 servers — to help provide connectivity for major financial exchanges in 40 countries.

- First release was in January 2006; openQRM 3.1.2 followed on Dec. 28.
- Integrates with infrastructure software, including VMware virtualization products and Nagios monitoring solutions.
- Plug-in capabilities let users add components via Java, PHP and other scripting languages.
- Developed by Qlusters, which offers support for openQRM and a managed service called openQRM Enterprise.



OSSEC

Distributor:

OSSEC HIDS, www.ossec.net

What it is:

Akin to security-information and event-management products, this host-based intrusion-detection system is used in log analysis, integrity checking and rootkit detection.

What it does:

- Monitors file and directory modifications.
- Provides accountability by storing authentication information.
- Triggers user alerts on failed authentication or questionable user additions.

What the experts say:

"We were able to get a lot of out-of-the-box functionality," says David Bianco, cybersecurity analyst for Thomas Jefferson National Accelerator Facility in Newport News, Va. "OSSEC immediately started parsing our firewall logs and alerting on Internet scans and probes. It's also helping track failed logins, system account changes, IDS alerts and a few other things — all with very little work on our part."

What you should know:

- Version 1.0 was released in January.
- Log analysis rules are in XML format.
- Processes run with privilege separation in chroot jail.
- Follows syslog RFC 3164 protocol.
- OSSEC offers commercial support.

McAdams is a freelance writer in Vienna, Va. She can be reached at jmtechwriter@aol.com.

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Brian Cucci
Manager, UPS' Advanced Technology Group

How to avoid bumps on the road to grid computing

A UPS IT executive shares a truckload of lessons learned on his grid journey

BY JULIE BORT

UPS has always been driven by technology. It invests close to \$1 billion per year in IT. Recently it added the New Data Center technology of grid computing to its infrastructure, says Brian Cucci, manager for UPS' Advanced Technology Group in Mahwah, N.J. Last October, Cucci's group completed a year-long project that moved a mission-critical COBOL billing application from the mainframe to a Linux grid running DataSynapse GridServer (www.nwdocfinder.com/7522). Here Cucci shares the five biggest lessons he learned from that and other grid projects.

Software licenses, not technical issues, could be what prevents an application from running on your grid.

"If you are going to target an application to run on a grid, you are virtualizing that application to run anywhere. But you may be locked contractually to run it only on, say, two dual-core boxes, and

then you are not going to get the power of that grid," Cucci says. His team analyzed which types of licenses were grid friends and which were foes, he says. The most grid-friendly is enterprise licensing, which lets software run anywhere. Concurrent-user licenses — or any form of license based on how

many times an application runs somewhere — also are friendly. Node-locking licensing — or any form of license that dictates the type of machine — are the worst. CPU-based licensing can work but isn't great because contractually limiting the software to a specified number of CPUs undermines the power of the grid. Getting vendors to modify their licenses to be more grid-friendly can be tough. Vendors are often fearful that multiprocessing computers will eat their revenues — and rightly so: Grids and multi-core machines often let enterprises do more with less software.

Expect capacity planning to be more guesswork and gut instinct than established engineering.

Because UPS chose Linux, an affordable operating system already well known internally, there were few surprises for the team in building the grid itself, Cucci says. But the team found little guidance in how to estimate workloads so it could determine how big a grid to build. Even the most intense workloads ran lightning-fast on the grid. A process that took 270 minutes to complete on the mainframe could be completed in less than 40 minutes on a two-server, eight-CPU grid, he says. Adding servers did not always translate into proportionately faster performance, however. For instance, tests showed that a two-server, eight-CPU grid connected to a storage-area network reduced application-processing time by 42% compared with a grid that had a single server and four CPUs. Adding a third server made the grid only marginally faster, however, reducing application-processing time by 53%. A four-server, 16-CPU grid reduced processing time by 56% compared with the single-server grid but ran only 3% faster than the three-server grid. As it experimented with capacity, UPS tended to overestimate the number of

See Grid, page 34

Picked for the grid

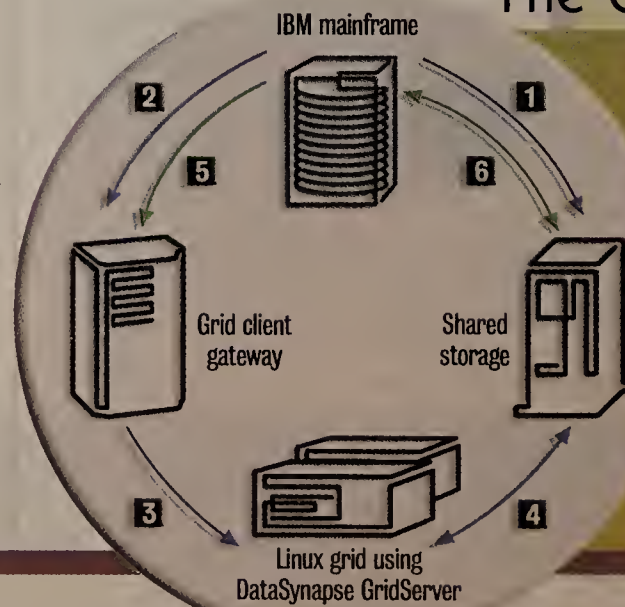
Low-hanging fruit? Fuhgeddaboutit. For its grid foray, UPS chose its all-important Flexible Bill Rendering application, which generates invoices for customers in the United States and 35 other countries. The volume is staggering — UPS produces 4 million to 6 million invoice pages weekly for mailing and posting online, says Brian Cucci, manager for UPS' Advanced Technology Group in Mahwah, N.J.

As a mainframe process, the U.S. portion of the invoice-composition application took about 20 hours per weekend. The grid requires a fraction of the time the mainframe needs to do this work, and not just because the Linux boxes are faster. In a test on a proof-of-concept grid built in 2005 (using spare CPU cycles on the IT staff's laptops), an analytics application took 45 minutes to complete what was taking stand-alone servers 9.5 hours, Cucci says. Encouraged by that finding, UPS built separate grids for its two primary data centers. Built with DataSynapse's GridServer, each grid is composed of four two-way commodity servers that run the grid engines; other servers manage the grid, he says. Each grid has the primary responsibility of running different applications — they now host three applications. The second grid acts as business continuity backup for the bill-rendering application.

See the diagram below for a look at how the invoice process works on UPS' Linux grid.

— Julie Bort

The UPS grid at work



- 1 A mainframe batch job copies raw billing data to storage shared between the mainframe and the grid.
- 2 A mainframe job scheduler activates a grid client via specialized code called the grid client gateway.
- 3 The gateway submits the job to the grid.
- 4 Invoice-generation software on the grid uses the raw billing files to create invoices, which then reside on the shared storage.
- 5 Upon completion, the gateway returns job codes from the grid's output to the job scheduler for use in the rest of the mainframe-based invoice process.
- 6 Subsequent mainframe jobs access the invoices from the shared storage.

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Grid

continued from page 32

boxes needed, Cucci says. But there was an upside: Because the grid was inexpensive to buy and operate, there was no large financial penalty for overbuilding it.

Don't expect help with utilization planning.

To maximize their investment, IT executives are going to want to run as many applications on the grid as it can handle. Cucci says his team's goal is 100% utilization, but mature workload-

management tools are not available yet to help plan for such usage. "Chargeback tools exist in DataSynapse, but are only good once you build and deploy," he says. Discovering how many applications, as well as which application combina-

tions, the grid can handle will be a matter of trial and error, so be sure your planning phase includes extra time for this, he says. Grid newbies also must remember to factor business-continuity capacity into the mix. For its business continuity

needs, UPS built two grids — one for each of its primary data centers — to run specific applications and to handle failover.

Understand that small technical differences between the grid and mainframe can cause the biggest trouble.

Often a grid is built to run only portions of a mainframe application. The goal is to slice out the compute intensive part, run it on the grid, then deliver the results without skipping a beat. To make this work, the grid has to produce results identical to the original mainframe code. This will probably require lots of unexpected reengineering. For instance, UPS' billing application uses a timestamp in the file name, on which the mainframe relies to work with the data. UPS discovered, however, that Linux uses a different timestamp convention from the one the mainframe uses — and the grid operates faster. As a result, the grid was naming multiple files the same and in a timestamp format the mainframe didn't recognize. Before going live, Cucci's team had to fix this hidden problem.

Plan on gutting your systems management processes.

If a long-running mainframe application has a problem, the IT folks have a reliable methodology for fixing it. When that same application — or just a part of it — moves to a new platform, IT executives need to build new systems management procedures for it. The tools used to diagnose problems on a Linux grid are different from those used to troubleshoot mainframe problems, plus the mainframe experts are often not the Linux experts. New support teams will likely need to be created. The most efficient project timeline considers the support process from the outset, Cucci says. Otherwise, this requirement will be discovered at some point — and it's best that it not be discovered after the production rollout is complete and a broken application is waiting to be fixed.



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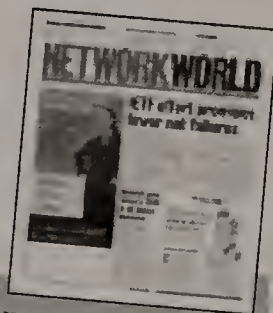
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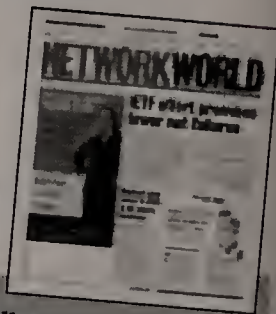
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VirtualIron



SOA

continued from page 35

interrelated. You need to understand the data, the services that interoperate with the data, new services you need, and then the processes to which they're bound," he says.

Think governance.

Building a new framework for an entire corporate infrastructure is no easy task. Trial and error is part of the deal, says Bryan Grant, lead application integration developer at DaVita in El Segundo, Calif. DaVita provides kidney-dialysis services via a network of about 1,255 outpatient centers, each of which generates data that is collected in a central location and made available to multiple applications, he says. It has been tough to change from point-to-point connections to a more open platform that lets distributed IT teams reuse applications, deliver new services, and link legacy and packaged applications. "You can never expect it to work the first time out," he says. DaVita is concentrating on improving governance — knowing what systems are connecting, and ensuring services put into production belong in production — and ultimately will buy software to help do that. "We were not good at governance in the past," Grant says.

A little incentive never hurts.

Over the past few years, the development teams at Dow Corning have done a good job of abstracting application elements, building up component libraries and reusing code, Gaus says. But it's generally easier and less expensive to build a new application using tried-and-true methods than to take an SOA approach. "To really consider what enterprise data is required for an application and what business processes are required, to build services around that data and those processes, then build an application on top of it, is going to be more expensive upfront than running off and building an application," Gaus

says. To combat the temptation to do things the old way, he says, the company is considering a proposal to require staff to spend a percentage — around 5% — of their project budgets on SOA.

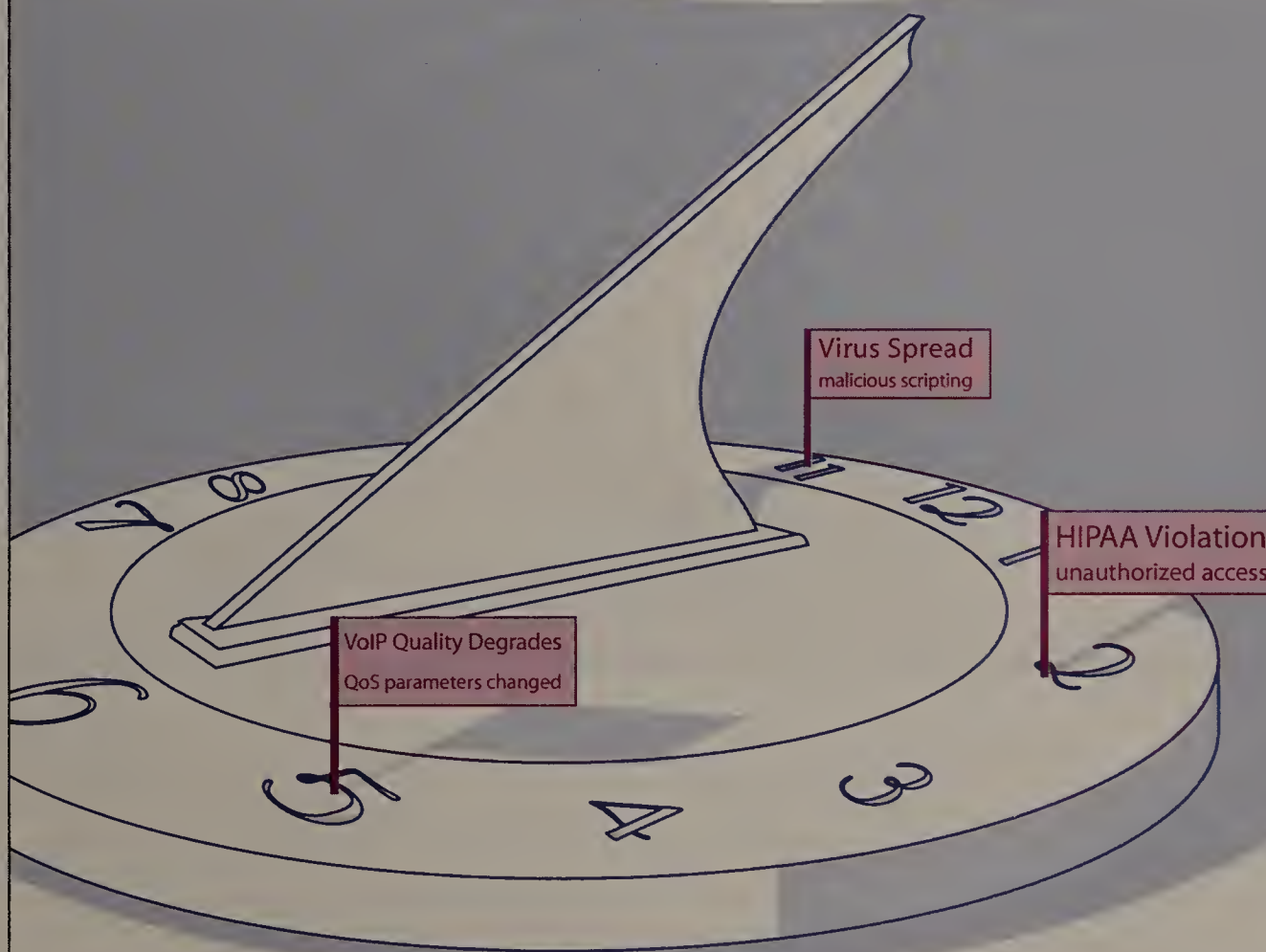
Budget realistically, or buy-in will suffer.

"People are hungry for information about how to budget for this stuff. The reality is, people don't understand the complexity of it, so they underestimate [cost]," says

Linthicum, who has devised guidelines for pricing SOA projects based on variables that include the number of data elements, the complexity of systems and processes, and new services needed. Typically, the time and labor

associated with building an SOA — not the cost of purchasing technology — can surprise the uninitiated. Enterprises usually need help from consultants, and they need participation from internal staff skilled in architec-

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ture, security, data management, networks and application development. As for timing, Linthicum's rule of thumb is to allow about three or four months for each system an SOA project envelops; with normal complexity, a six-

system project will take a couple of years from inception through funding, deployment and completion, he says. Adequate planning for time and labor is critical if you want to keep the business on your side. "The min-

ute you underestimate that, people are going to lose faith in the project, because you're going to deliver stuff way over budget," he says.

Don't skimp on documentation.
You must have clearly docu-

mented policies and procedures for every aspect of the SOA development life cycle, says DaVita's Grant. Devoting the traditional 75% of effort to planning and documentation, and 25% to development makes things a lot more man-

ageable, even though "everybody likes the 25% and nobody likes the 75%," he says.

Registries aren't a cure-all.

Documenting service attributes is a tricky part of an SOA, says Washington Group's Colton. "It has wound up being a lot more complex than I ever imagined," he says. One of Colton's ongoing projects is to find a way to keep track of the technical details associated with services, such as translation requirements and service dependencies, and functional considerations, such as what processes are involved. Some commercial registries don't do justice to both types of information, and Colton doesn't want to rush into a premature technology purchase: "We developed a spreadsheet, for now, to understand all the pieces of information we need to track. Once we do that, we'll either build one internally or look at the commercial solutions to see if they address our needs."

Don't forget the network.

SOA is going to add to the load on the network — it's that simple. Proper network design calls for modeling performance, which many enterprises fail to do adequately, Linthicum says. "You can model performance by looking at the behavior of a set of services. Now extend that 10,000 times. How many packets are going to be dispatched? How many packets are going to be received? The kind of bandwidth you have — is this going to bring your network to its knees? Sometimes it does," he warns.

Mind your techie talk.

SOA is a business endeavor, and it should be communicated that way. "Trying to get the IT language out of what we talk about, and get into the business language, is an ongoing issue," Washington Group's Colton says. "Nobody cares about how I do it," he says. "What they care about is what business processes I can address."

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Cool career opportunity: data center architect

This New Data Center role could put you on the path to the executive suite

BY SANDRA GITLEN

Are you a go-getter who has experience managing servers, storage, security and facilities, and wants to get into the next big thing? If so, you just might be the perfect person for a role that is growing exponentially in importance: data center architect.

Many companies' data center responsibilities are broken out piecemeal, but experts say that companies embracing New Data Center technologies, such as blade servers, grid computing and virtualization, will succeed by consolidating the management of all critical functions into a single role. Using these advanced technologies begs for someone capable of bringing an integrated, holistic approach to data center architecture and design, says Johna Till Johnson, *Network World* columnist and co-founder of Nemertes Research.

For a data center to be secure, its architect must factor in facilities design and architecture, Johnson says. Likewise, to create a sturdy server and storage architecture, the architect must plan for manageability and operations. By placing all such responsibilities under the purview of a single person, the company gains strength in long-range planning and short-range execution. On the other hand, Johnson says in her "New Data Center Strategies" newsletter, companies who don't risk failure (see www.nwdocfinder.com/7521).

Len Eckhaus, founder of AFCOM, a data center management group with 3,000 member organizations, agrees. "Years ago, a data center architect simply ran jobs and processed payroll. It was an entry-level position. Today there is so much complex equipment with specific security,

space, power and cooling requirements that you need someone who can manage not only the equipment but the whole data center environment," he says.

Where it's at

IT professionals who are well-versed in server, storage and security technologies can advance their careers by adding heating and cooling, power and other facilities management expertise to their résumé, Eckhaus says. Those who do may even find themselves within spitting distance of such executive-level positions as CIO and CTO, he says.

"The data center is where it's at today. There's a huge awareness among corporate executives of the critical nature of the data center, therefore the data center architect is now in line for IT's top spot," Eckhaus says.

This rise in importance comes from the momentum within the data center industry, Eckhaus says. More than 70% of AFCOM members say they are moving their data centers, building new ones or expanding their facilities within the next five to 10 years, he says.

In addition, such New Data Center technologies as Power over Ethernet,

The data center architect is going to make decisions that aren't very popular [such as insisting temperatures remain low despite high cooling costs].

David May
Data center architect
H.E. Butt Grocery Co.

blade servers, grid computing and virtualization have had a tremendous impact on data center capacity planning, Eckhaus says.

David May, asset and data center manager at H.E. Butt Grocery Co. in San Antonio, Texas, deals with these issues firsthand. As data center architect for the \$11 billion company, which has 60,000 employees and 300 stores in Texas and Mexico, he oversees not only the servers, storage and network but also the security, power and cooling for the data center.

This holistic view is necessary because of the critical nature of the data center. "It can't be treated like any other building because it's not," May says.

Ins and outs

May learned the ins and outs of power and cooling so

he could lead the decision making for the company's data center, as well as its expansion. "Blade servers have a lot of benefits, but they are energy hogs. We are just now finishing a three-year electrical upgrade to put a megawatt of redundant power on the floor," he says.

IT professionals must lead the charge because they understand the ramifications of environmental changes for equipment. And a data center architect should report to the CIO or CTO, May says. "The data center architect is going to make decisions that aren't very popular," he says. For instance, a data center architect will go to battle over temperature costs. Facilities says if we crank up the temperature five degrees, we can save money, but that puts the equipment in jeopardy," May says.

The data center also has to be engineered with redundancies that can be costly but are critical for disaster recovery and business continuity, May adds. For instance, he has placed the data center on a separate, backup generator in case of a power outage on the main campus.

Increasingly, companies are anointing a data center architect to justify the costs in hot-button budget issues, such as space allocation, says Andreas Antonopoulos, senior partner at Nemertes. "There might be a situation where the data center appears to be only half-full, but the empty space is misleading because of the power and cooling requirements of technologies such as blade servers," Antonopoulos says.

"We've gone from using 1.5 to 3 kilowatts of power to where 15-kwh racks are not uncom-

mon. Many data centers can't support that and need to be upgraded," Antonopoulos says.

Becoming a facilities expert on top of keeping pace with the latest IT technologies isn't easy. H.E. Butts' May recommends digging deeper into such unknown territory as electricity and HVAC by taking courses at local technical schools, subscribing to industry journals and researching vendor Web

sites. "Eventually, all data centers will be completely isolated from other parts of the campus. All of their considerations — electrical, cooling, water — will be separate," he says. "We're not there yet, but you need to be ready"

Gittlen is a freelance writer in Northborough, Mass. She can be reached at sgittlen@charter.net.

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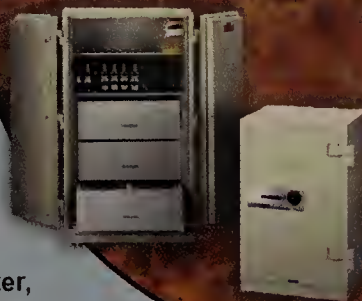
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E-MAIL NEWSLETTER SHOWCASE: Tech exec

Smaller hard drives yielding big benefits in the data center

BY LINDA MUSTHALER

Two trends in hard disk technology are coming together to create a compelling set of benefits for buyers of servers and storage devices. Drives are getting smaller, faster and less expensive, and you get to reap the benefits.

The first trend is the server and storage manufacturers' move to Serial Attached SCSI (SAS) devices. Available since about mid-2005, SAS is quickly replacing the older technology of parallel SCSI drives. The main benefit of the SAS technology is speed; data can move in and out of the drives more quickly in the serial configuration.

The second trend in drive technology is enabled by SAS. Because the physical connector of a SAS drive is about a quarter the size of the connector of a traditional SCSI drive, SAS drives have taken a small form factor (SFF). Drives have shrunk from 3.5 inches in size to 2.5 inches.

The SFF SAS drives address two major concerns of the data center manager: performance and power efficiency. Because the 2.5-inch drives are 70% smaller than the 3.5-inch drives, the distance needed to span the disks to read and write data is shorter, vastly improving performance and reliability. SFF SAS drives deliver, on average, 130% to 150% greater system performance in the same footprint. They also are less likely to fail.

These SFF drives also need 40% less power, meaning they run cooler than previous generations of drives. And because the drives are smaller, there is more room inside the server cabinet to allow for better air circulation. The small size also means that more drives can fit into a cabinet, yielding more capacity to store your data.

The main manufacturers of the SFF SAS drives are Seagate Technologies and Fujitsu Computer Products. Both

companies report phenomenal sales of the SFF SAS drives. Seagate, for instance, has sold about 2 million drives in the past nine months. Fujitsu, too, reports that sales of the drives are ramping up steeply.

This is good news for the customer. Unless your company puts together its own servers or storage units, you are likely buying from manufacturers such as HP, IBM, Sun and Dell. These companies have jumped on the SFF SAS bandwagon in a big way, especially for blade servers. Because these manufacturers are purchasing huge volumes of the drives, the price per unit is dropping sharply.

The economies of scale have allowed Seagate to cut the price of one SFF SAS drive in half in just a year. As the cost of components drop, the price of a complete system drops as well.

The result is you can purchase a system that is more reliable, has better performance, and costs less to operate than previous generations of servers and storage devices. This comes when more companies are looking to consolidate servers and move to denser server and storage platforms.

If you're interested in learning more about the technical aspects of SAS and specifically SFF SAS, read a story by Richard Scruggs, product marketing manager for HP's Industry Standard Server Division (www.nwdocfinder.com/7424). Also, Fujitsu offers a few white papers about the technology, and Seagate provides information about its Savvio line of SFF SAS drives.

Musthaler is a principal analyst at Essential Solutions, a Houston technology assessment firm. She can be reached at lmusthaler@essential-iws.

E-MAIL NEWSLETTER SHOWCASE: Linux

VCs bet big on open source companies

BY PHIL HOCHMUTH

Investors showered over \$21 million collectively on two open source start-ups last week: Fonality, an Asterisk IP PBX vendor, and GroundWork Open Source, a network management firm. Venture capitalists are betting these companies will challenge larger vendors such as Avaya or Nortel in telephony, or HP or IBM in network management, with lower-cost, open source-based products.

GroundWork Open Source, which received \$12.5 million from investors JAFCO and SAP Venture, makes the GroundWork Monitor, which allows IT administrators to view performance and operations data on multiple servers and applications across a network. The product ties together several open source tools, including the Nagios network management tool, with Apache, PHP and a MySQL database to provide a complete monitoring system, the company says.

The software itself runs on Red Hat Linux and SUSE enterprise servers or workstations, as well as CentOS. GroundWork offers the source code and soft-

ware on which its product is based, as well as professional subscription-based services for companies using the code in production.

Meanwhile, Fonality, which makes an open source-based VoIP system for small businesses, received a \$7 million investment from Azure Capital Partners, which previously invested in the company. Like GroundWork Open Source, Fonality takes a popular open source platform — in this case, the Asterisk IP telephony system — and packages it into a product, including management tools and support offerings. Fonality's PBXtra is a small-office phone system. It also sells a hosted VoIP service which uses the PBXtra device as a customer premise box to terminate calls.

We may be almost a decade past the time when venture capitalists threw money at firms such as VA Linux and Red Hat, in the hopes of a lucrative IPO payday. But clearly investors still believe there is value in companies that repackage freely available software with support and services offerings for businesses. ■

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In Their WORDS

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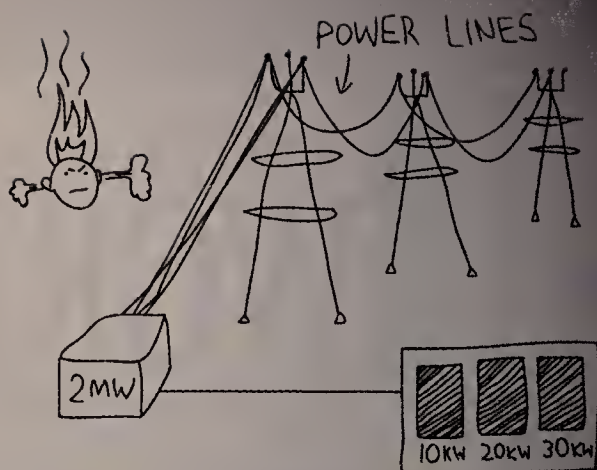
For instance, AutoPilot for Network Problem Management provides the capabilities you need to ensure successful management of the incident and problem lifecycle across your next-generation network infrastructure. Using pre-defined, ITIL-based processes, AutoPilot is easily integrated with your existing infrastructure to automate network problem diagnosis, triage and remediation activities.

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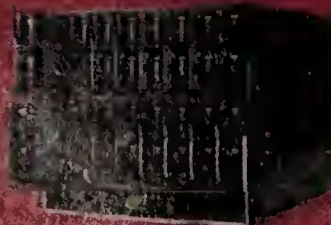
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Dave Bartlett
Vice president of industry solutions
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Are we automated yet?

The man behind IBM's autonomic-computing initiatives gives us a status report

BY BETH SCHULTZ

For the past five years, Dave Bartlett has been IBM's chief authority guiding large enterprises on how best to use self-managing technologies and standards. Today, as vice president of industry solutions, Bartlett is charged with using his autonomic-computing expertise to create highly repeatable, end-to-end packages that any company in a vertical market segment could implement easily. Here he delivers a status report about autonomic computing, a foundational New Data Center concept.

Has autonomic computing achieved its promise yet?

If you look back five years, the big concern was that IT systems were too complex to manage and maintain. That's still where we are today, and the autonomic standard of self-managing technology is still the solution. It's the one initiative that cuts across multiple

customer platforms and technologies.

What we didn't realize was how much time and effort it would take to have autonomic computing take hold throughout the industry and truly transform the way we work. I can point to many individual examples of success, but autonomic computing still is not pervasive across the industry.

Have you changed your approach because autonomic computing technologies aren't as widely used as you thought they would be by now?

We knew from the beginning that solving the problem of complexity went beyond IBM's scope. But in working with large enterprises, we've learned how much collaboration is needed on the standards and technologies that will bring about this sea change. And so we've built what I call the autonomic ecosystem. This is about getting participation, not just from other software vendors but from systems integrators, as well as working with channel partners and resellers. Part of the ecosystem also heavily involves research, and now we are working with other research organizations, corporations and universities. If you're really going to address the full set

example is the eFuse technology in the Power5 chips. It can change circuit design based on environmental attributes, such as voltage or temperature. This means performance problems can be handled right in the hardware without human intervention.

The more-complex cool examples come at the top of the stack, leveraging the autonomic capabilities of numerous products. We focus on workload management, provisioning and IT optimization, building these capabilities into products, such as the latest WebSphere, the DB2 Viper release, and Tivoli provisioning and orchestration software. This reduces the need to provision hardware to meet the peak core requirements by enabling the real-time provisioning of what's needed, improving availability.

"What we didn't realize was how much time and effort it would take to have autonomic computing take hold . . .

of what customers are faced with, that's going to require a certain amount of innovation, as well as group-level support for this transformation. We've moved from yesterday's concept of innovation being a closed, proprietary thing to something that really needs to be open. And when I say open, I'm talking about very open in a way I haven't seen in this industry, in IBM, before. This is contributing to open source, being very open in the standards work with traditional competitors, being very open on bringing our research-and-development resources right to the customer site, doing open partnerships with universities.

I've read that IBM itself has implemented more than 500 self-managing features in 75 distinct products. What are the coolest?

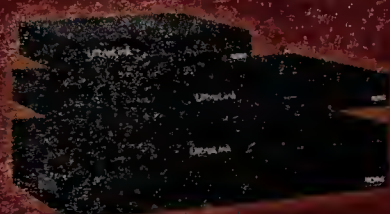
At the most fundamental level, an example is the "airbag" technology in the ThinkPad [notebook computers]. One of the things we focus on is self-protection. We often think of protection in terms of viral intrusions, but really the biggest danger to a laptop is dropping it and then losing data on the hard drive if the head crashes. So we put in a chip that can sense a change in velocity and pull the write-read-write heads off of the drives and thus protect the data. Another

How has autonomic computing shown its enterprise value?

One example is how Guardian Life Insurance [in New York] applied autonomic technology for spotting problems in business applications. Before IT administrators at Guardian Life deploy new applications, they simulate the deployment in a test environment. During the test, the various applications, servers and network devices naturally generate error logs when they experience hardware and software failures. The challenge was that these error logs appeared in different formats, which made it hard to identify the source of the problems. The time and effort it took to isolate and fix problems was delaying software deployment and costing the company money. Using IBM's autonomic problem-determination technology, Guardian Life systems now detect, analyze and diagnose problems without human intervention, so repair is faster and easier. IBM's technology also allowed Guardian Life to centralize the scattered error logs into a single format so they can be viewed, analyzed and resolved easily. Guardian Life has said it has cut the time required to fix problems by 90% — and that's more than an incremental few percent!

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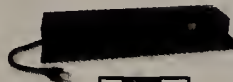
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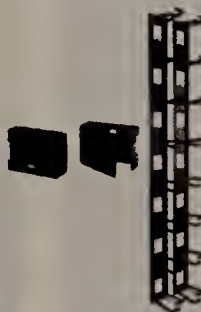
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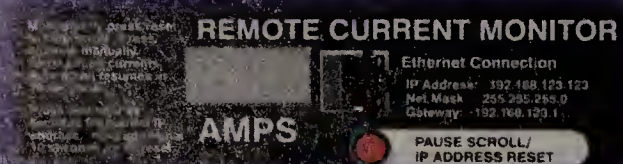
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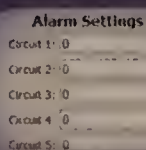
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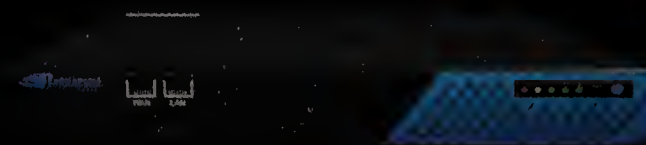
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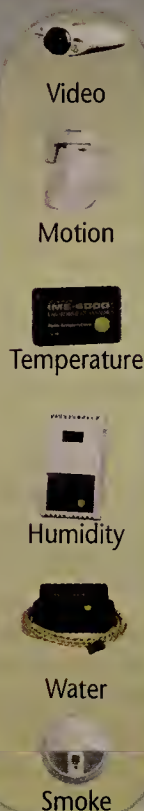
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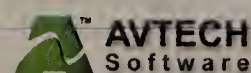
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Cisco extends LAN security

BY STEPHEN LAWSON

Cisco last week brought a raft of security mechanisms for wired LANs to the wireless part of corporate networks.

The vendor has upgraded its software and launched a set of guidelines for integrating wired and wireless security, called the Cisco Secure Wireless Solution. The system makes the wired and wireless networks work together to bolster security. For example, if a notebook PC is connected to the LAN via a wired port, its wireless radio will be turned off automatically to prevent an attacker from using the wireless connection as a path on to the WLAN. In addition, a Cisco WLAN controller, the mechanism in an appliance, router or switch that controls wireless infrastructure, can disconnect a WLAN client that poses a threat.

The new capabilities are available to any customer with current Cisco software, says Chris Kozup, manager of mobility solutions at Cisco. Customers can use the guidelines themselves to build a security architecture or enlist the help of Cisco's services organization or third parties.

Customers are able to bring wireless devices into Cisco's security system, which is built around making sure any client is authorized and free of threats before it can hook up to the network. But bringing the same set of tools into the wireless domain can make that process easier, Kozup says. For example, if an enterprise wanted to secure wireless clients

using Cisco's Network Access Control appliance, the user connecting via wireless would have to manually log into the Network Access Control. Now that process can be transparent to the user, just as it is on the wired network, he says.

In addition to the Network Access Control, the architecture includes Cisco's ASA firewall, Security Agent, Intrusion Prevention System software, Secure Access Control Server and Secure Services Client. These longtime features of Cisco's wired security are being extended to WLANs as the company's latest step toward unifying wired and wireless into one network, Kozup says.

The security built into all Wi-Fi products has improved in recent years, and many vendors sell tools to secure WLANs, such as Aruba's technology that uses encrypted tunnels. Cisco's new approach may not be significantly more secure than those options, but it can simplify life for IT administrators, says Farpoint Group analyst Craig Mathias. For one thing, it's easier if security for both parts of the network uses a single directory of users, he says.

Approaches that are less expensive and more scalable can work just as well, says Burton Group analyst Dave Passmore. "This is Cisco assuming the network perimeter needs to be protected right at every edge, rather than a more centralized approach," he says. There are no significant threats to an enterprise LAN that can't be handled from within the wired part of the network. ■

Volume servers sucking up power

BY JENNIFER MEARS

Energy consumption in corporate data centers doubled between 2000 and 2005, caused in large part by the spreading use of volume servers, a new report says.

The study was commissioned by AMD and conducted by Jonathan Koomey, a staff scientist at Lawrence Berkeley National Laboratories and a consulting professor at Stanford University.

Koomey found that servers and associated infrastructure, such as cooling and uninterruptible power supplies, in U.S. data centers consumed about 45 billion kilowatt hours of electricity in 2005, accounting for about 1.2% of the country's electricity consumption, roughly equal to the power drawn by the nation's color televisions. The electricity costs for the servers and associated infrastructure reached \$2.7 billion.

Koomey found the bulk of the

Demanding power

If IDC's server forecasts hold, worldwide server energy consumption will increase 40% from 2005 to 2010, provided power demands per server remain fixed. If power use per server increases, as it did between 2000 and 2005, then energy consumption will spike

76%
by 2010.

increase, about 90%, was caused by the rise in the number of servers, those priced below \$25,000 and most powered by AMD or Intel processors. While these systems have become increasingly powerful, energy use per server has increased slightly, from about 190 watts per server in 2000 to about 220 watts per server in 2005. As a result, the spike in energy consumption is linked to the number of volume servers installed, which has risen dramatically, jumping from about 12 million in 2000 to 26 million in 2005.

"Mainly, this is a story of volume servers becoming much more common," Koomey says.

In addition, the systems are increasingly dense, with blade servers and multicore machines, making it even more important for organizations to consider energy efficiency in charting data-center deployments, Koomey says.

"In the data centers that we've done benchmarking on, you typically find a third or half of the racks are empty, because you've got air cooling and a lot of restraints in how many servers you can pack in," he says.

In one organization the data center had maxed out its energy availability, but with a redesign, it was able to add more servers, Koomey says.

"They changed out the lighting, and they moved some of the unnecessary air-conditioning units and the fans and other stuff, and they were able to increase the number of servers in their server room by 30% while remaining under the same power budget," he says. ■

Start-up to alert IT on app performance

BY DENISE DUBIE

A start-up with roots in Israel plans to change the landscape of application management with software that baselines normal application behavior and gives IT a heads up about anomalous behavior all the way down to the

user desktop.

Aternity, formerly known as Gelion Networks, started in 2004, garnered \$7.5 million in venture capital funding in March 2005 and quietly launched its Aternity Solution software last summer.

The company, which has devel-

oped software that can tell network managers which applications within a Citrix server are having problems, says it can pinpoint the root cause of application-performance problems and prevent them from affecting users.

"Our software establishes this baseline that understands what is normal and can apply attributes such as location, time of day, days of week, business groups and more," says Jaimin Patel, vice president of business development and marketing at Aternity. "If any deviations take place, we are able to detect it sooner than most users will be able to feel the performance problem. We can give IT managers an actual list of users that will be affected."

Aternity's efforts fall in line with moves by such application-management vendors as Citrix (with its Reflectent Software acquisition), Compuware, Coradant, Mercury Interactive (now part of HP) and TeaLeaf to capture application performance on desktop machines and monitor the quality of experience for users. The soft-

ware is also similar to network behavior-analysis tools that monitor traffic for anomalous patterns to better secure internal networks.

Aternity Solution consists of server software and distributed software agents on managed clients. The server software contains an analysis engine, database and reporting capabilities that enable network managers to view normal and abnormal behavior patterns. The company says the software baselines typical behavior and is able to alert IT staff when applications begin to perform in an unfamiliar manner. It can pick up on such irregularities as slowing response times, additional hops along a delivery chain or unnecessary system queries.

As for how the company differs from competitors, Aternity says it doesn't discriminate between Web-based and internal-based applications when tracking performance.

Patel says the company will launch officially an updated product in the coming months. ■

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BACKSPIN Mark Gibbs

High expectations and hacking

(hooray!), but those expectations are low (boo). In other words, CEOs think about IT the way Congress thinks about the proposed surge of troops to Iraq: They're willing to vote against it, but the vote will be nonbinding.

Yep, low expectations are part and parcel of what people expect of complex situations and large organizations. Consider the case of Shawn Carpenter. He expected that his employer, Sandia National Labs, as well as the Army and the FBI, would care about national security enough to do something about a major hacking attack. His expectations were way too high.

In 2004 Carpenter discovered that Chinese hackers had been mounting a series of attacks on major American networks. These attacks had been in progress since at least 2003, and the U.S. government (in the guise of the Army and the FBI, as far as I can tell) even had a name for them: Titan Rain.

Carpenter found out that Sandia Labs was under attack, so he took the story to Sandia's security wonks. Popular opinion has it that the Sandia security people wanted to avoid "embarrassment," and wanted him to drop it.

Carpenter didn't drop it. He somehow got tied up with U.S. Army counterintelligence, which, in turn, hooked him up with the FBI. Eventually, the FBI got cold feet and also requested that Carpenter desist.

You may wonder why the FBI would get chicken-hearted. The reason was Carpenter was hacking to find the hackers and in the process doing things that are illegal, such as cracking routers and installing spyware.

It was at this point that Sandia found out what Carpenter was doing (again, how they found out isn't clear) and not only fired him, but also had his security clearance canceled. The word on the street (I love that phrase but actually it was *Time Magazine*) is that the head of Sandia's security wanted him "punished for disobeying his demands not to inform outside law enforcement agencies."

Carpenter took Sandia to court in 2006 and last week prevailed, with the jury finding Sandia guilty of firing Carpenter "in violation of public policy." Better yet for Carpenter, they awarded him \$4.7 million in damages! Of course, Sandia will appeal, but at least Carpenter has been vindicated. He also got his security clearance back and is working for another government department.

Various commentators have characterized Carpenter as "pig-headed" and "stubborn," and certainly he was committed to finding the hackers in a way that wasn't self-preserving. On the other hand, he sincerely believed that what he

was doing was in the national interest and we should applaud him for that.

Now, what of his illegal hacking? Obviously the FBI must have been encouraging him for the obvious reason that he could get results quickly and they couldn't. As I understand it, if the FBI wants to attempt such activities, it has to fill out forms in triplicate, after which they are lost, found, lost again, buried in soft peat for three months and recycled as firelighters.

Which raises the interesting question of how can we protect our network and computer assets if our security agencies are hamstrung by laws designed for the public at large? You'd have to be insanely optimistic to think that hacking of our assets by random hostile foreigners is not going to get much worse.

I have a suggestion: Let's call open season. Let's take all of the antihacking legislation off the books and make it the responsibility of computer owners to keep their own assets safe. Let's create a culture of online paranoia so that we take security seriously.

Of course, my suggestion reeks of high expectations. We all want that cozy feeling that comes with the false sense of safety, and if Congress were to vote on such a proposal it would approve it. As long as it was nonbinding.

Your vote to backspin@gibbs.com.



NETBUZZ News, insights and oddities

Prepaid credit cards: Future of finance?

Paul McNamara

Prepaid credit cards for those without bank accounts and teens without self-control have been available in the United States for years. Now, Visa New Zealand, in cooperation with that country's postal service, is taking the concept to a new level that promises a measure of protection from online identity theft, but also the prospect of abuse by young people looking to access adult services, and criminals needing a cloak of anonymity.

Moreover, Visa says these prepaid cards are becoming a "de facto" means of conducting commerce online. The company is anticipating the market for them will move well beyond gift-giving and those who otherwise cannot get regular credit cards.

Whether this evolutionary change in prepaid cards will be moving to a post office or convenience store near you is a question I couldn't get Visa USA to answer.

Called the "Prezzy Card," New Zealanders may buy them preloaded with an amount between \$25 and \$500 at any postal outlet — without providing any identification or proof of age. Although cash purchases are limited to \$100, the stipulation seems little deterrent to an individual interested in amassing a kitty of untraceable online currency.

From a New Zealand press report: "[Visa's] New Zealand country manager Iain Jamieson says it is already clear that prepaid Visa cards have a far wider market and are emerging as a 'de facto' tool for online shopping. Customers key in the number and expiry date on the card when buying online, as with a standard credit card, and type 'prezzy card holder' into the name field, if required. NZ Post has so far sold 40,000 Prezzy Cards, and more than 10 percent of the transactions have been online purchases, Jamieson says. About 5 percent of standard credit card transactions are made online."

In the United States, parental controls are not only a staple of prepaid credit card programs, such as Payjr Prepaid MasterCard and Visa Buxx; they are marketed to parents as a primary justification for caving in to a child's craving for plastic. If teens can load their allowance and after-school job earnings onto plastic that is free from any oversight by Mom and Dad, one would guess that such an arrangement would prove

popular with young people — if not their parents.

As for which merchants will or will not accept such anonymous payments — porn sites, gambling venues, etc. — that's another can of worms. Visa has not mandated any age verification by online merchants who accept the cards.

Wikipedia: On the brink? Or crying wolf?

Florence Devouard, chairwoman of the Wikimedia Foundation, touched off a tempest recently with her suggestion that Wikipedia has funding for only another quarter and "might disappear" if donations don't pick up. . . . Dire stuff, if true.

Devouard told a conference audience: "At this point, Wikipedia has the financial resources to run its servers for about three to four months. If we do not find additional funding, it is not impossible that Wikipedia might disappear."

A spokeswoman for the organization stepped up with this backpedaling, which was posted to Nick Carr's blog: "Ms. Devouard's comment was taken out of context," she claimed, although it's difficult to imagine the context in which "might disappear" could be taken differently. "Wikipedia will not be closing anytime soon. Ms. Devouard was simply referring to the ongoing, pressing needs for funds that Wikipedia, like most non-profit organizations, face. Ms. Devouard was attempting to showcase how, because of our global reach, Wikipedia needs to be much more creative in its fundraising efforts."

On the last score there can be little dispute.

When you think about the impact that Wikipedia has had upon our society — not all of it good, certainly — it's astounding that the organization tasked with keeping it afloat has to resort to bake sales and begging. When last we checked in on Wikipedia's fundraising efforts, they were closing in on \$1 million, with the current total about \$1.1 million. They say they need \$5 million a year to sustain operations.

That math certainly doesn't look good.

Contributions to them. Comments to buzz@nww.com.



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